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PREFACE

Fertility and its determinants have been urgent topics for research in recent decades with the rapid expansion in world population. Attempts to control population growth have focused on reducing fertility, with some apparent effect. The peak rate of growth in the world's population has now been passed, but growth is still at a high level in almost all the developing countries. In absolute numbers, the increase in the world's population continues to rise; according to United Nations medium projections, more people will be added each year for the next 50 years than were added in 1980.

This report is one of a series of country studies of fertility determinants carried out by the Panel on Fertility Determinants of the Committee on Population and Demography. The Committee on Population and Demography was established in April 1977 by the National Research Council in response to a request by the Agency for International Development (AID) of the U.S. Department of State. It was widely felt by those concerned that the time was ripe for a detailed review of levels and trends of fertility and mortality in the developing world. Although most people in the demographic community agree that mortality has declined in almost all developing countries during the last 30 years, there is uncertainty about more recent changes in mortality in some countries, about current levels of fertility, about the existence and extent of recent changes in fertility, and about the factors determining reductions in fertility.

The causes of the reductions in fertility--whether they are the effect primarily of such general changes as lowered infant mortality, increasing education, urban rather than rural residence, and improving status of women, or of such particular changes as spreading knowledge of and access to efficient methods of contraception or abortion--are strongly debated. There are also divergent views of the appropriate national and international policies on population in the face of these changing trends. The differences in opinion extend to different beliefs and assertions about what the population trends really are in many of the less-developed countries. Because births and deaths are recorded very incompletely in much of Africa, Asia, and Latin America, levels and trends of fertility and mortality must be estimated, and disagreement has arisen in some instances about the most reliable estimates of those levels and trends.

It was to examine these questions that the committee was established within the Commission on Behavioral and Social Sciences and Education of the National Research Council. It was funded for a period of five and one-half years by AID under Contract No. AID/pha-C-1161 and Grant No. AID/DSPE-G-0061. Chaired by Ansley J. Coale, the committee has undertaken three major tasks:

1. To evaluate available evidence and prepare estimates of levels and trends of fertility and mortality in selected developing nations;
2. To improve the technologies for estimating fertility and mortality when only incomplete or inadequate data exist (including techniques of data collection);
3. To evaluate the factors determining the changes in birth rates in less-developed nations.

Given the magnitude of these tasks, the committee decided to concentrate its initial efforts on the first two tasks. This work is detailed in a series of country and methodological reports from the National Academy Press, and the demographic estimation methodology developed for the country studies is laid out in a volume issued by the United Nations. As of early 1982, 168 population specialists, including 94 from developing countries, have been involved in the work of the committee as members of panels or working groups. The committee, the commission, and the National Research Council are grateful for the unpaid time and effort these experts have been willing to give.

The committee initiated work on the third task in October 1979 when the separately funded Panel on Fertility Determinants was established. Research on the determinants of fertility change has been carried out by scholars from several disciplines, and there is no comprehensive accepted theory of fertility change to guide the evaluation. Because of this state of knowledge of the causes of reductions in fertility and the difficulty of the task, the Panel on Fertility Determinants includes scholars from anthropology, demography, economics, epidemiology, psychology, sociology, and statistics. Three committee members serve on the panel. The work program of the panel includes the preparation of a report that attempts to summarize and integrate scientific knowledge about the determinants of fertility. In addition, the panel has prepared a few illustrative cross-national analyses and studies of several developing countries.

This report is the third panel country study. It has been prepared by Geoffrey McNicoll, Senior Associate and Deputy Director, Center for Policy Studies, The Population Council, New York and Masri Singarimbun, Director, Population Studies Center, Gadjah Mada University, Yogyakarta. Although it is self-contained, the study is in a sense a companion to the report of the committee's Indonesia Panel, Recent Trends in Fertility and Mortality in Indonesia (forthcoming), which critically reviews some of the demographic estimates that form the explicanda for the present document. Both the present authors were members of the Indonesia Panel. However, this study has been able to draw more widely on the results of the 1980 Indonesian census than did the panel report.

The work on this study was carried out at the Population Council and at the Population Studies Center, Gadjah Mada University. During its preparation, Geoffrey McNicoll spent two periods in Indonesia, and Masri Singarimbun visited New York to work on the manuscript. The Population Council provided computer services and the logistical support, and, more importantly, both institutions essentially supported the authors during the time they devoted to the preparation of this report. The panel and the committee are grateful to these institutions for all of this support.

The authors, panel, and committee gratefully acknowledge the assistance of several individuals who provided information, data, ideas, and helpful comments: John Bongaarts, Mead Cain, Sofian Effendi, Ken Hill, Terence H. Hull, Samuel S. Lieberman, Si Gde Made Mamas, Chris Manning, Riningsih Saladi, Richard Sturgis, Sam Suharto, and Lukman Sutrisno. An early version of the draft report was discussed at a country studies workshop organized by the panel in January, 1982, with financial assistance from the Rockefeller Foundation. Finally, panel and committee reviewers provided advice and suggestions.

Several members of the panel and committee staff assisted in the preparation of this report. On the production side appreciation is expressed to Kate Venet at the Population Council for expert and tireless word-processing of successive drafts of the manuscript, to Irene Martinez, who helped type the text and tables, and to Rona Briere, who edited the report. Elaine McGarraugh handled the production editing details with her usual precision, alacrity, and cheerfulness.

W. PARKER MAULDIN, Chair
Panel on Fertility Determinants

SUMMARY

Indonesia's fertility has declined significantly since the late 1960s. Total fertility (the number of children born to a woman over her reproductive life under prevailing fertility patterns) was around 5.5 in the period 1967-70 and little different a decade before; early estimates from the 1980 census put it at 4.7 for 1976-79. This study sets out the complexity of the circumstances in which the fertility decline took place, assembles the available information on its pattern and proximate determinants, and seeks to identify the underlying factors responsible.

The background to the demographic change was the establishment of a new political order in 1966-67 following years of increasing conflict. The new political conditions profoundly altered the national policy environment--economic development being now accorded a central status--and altered to the realities of local administration. The local government apparatus that many observers had seen as conspicuously weak and ineffective was transformed into a strong and, in some domains, single-minded instrument of central policy. Following hard upon the successful economic stabilization measures introduced in 1967 was an export recovery, a renewed inflow of foreign aid, and a few years later, the OPEC oil price surge. Revenues poured into the government's hands and Indonesia embarked on its first period of rapid economic growth since the postwar recovery of the early 1950s. While direct benefits were unevenly spread, by the end of the 1970s some improvement in real incomes was apparent among a large section of the population. The political reorientation and economic gains together opened Indonesian society to a profusion of imported consumer goods and to more intense exposure to "western" cultural influences on consumption

patterns and styles of living. In population, the government made a strong top-level commitment to a policy goal of lower fertility. This was translated into a vigorous family planning program which rapidly blanketed Java and Bali, and later the rest of the country, with a distribution network for modern contraceptives and campaigns to promote their use.

In addition to these post-1967 changes, there was also a continuation of earlier trends of improving literacy and average educational attainment, declining (though still high) child mortality, and fewer women marrying at very young ages. The simple turnover of population was bringing the large 1950s birth cohorts into labor force and reproductive ages.

The broad picture of the resulting fertility decline can be summarized as follows. Total fertility most likely dropped by nearly one child per woman between the late 1960s and the end of the 1970s. The decline was spread throughout the country, except for the eastern provinces, but was most pronounced in Java and Sumatra. Its proximate determinants were chiefly a rapid increase in use of modern contraception in Java and, late in the 1970s, increasing use in other regions as well. In 1980 the contraceptive prevalence rate among currently married women aged 15-49 was 27 percent. By itself, the adoption of modern contraception would have cut Indonesia's total fertility by perhaps 1.5-2. The effect was partly offset, however, by falling durations of postpartum infecundability associated with shorter breastfeeding and eroding postpartum taboos which, ceteris paribus, could have raised total fertility by 0.5 or more. The increase in female age at marriage had relatively small influence on mother's age at first birth, and its effect on overall proportions of women married was largely counterbalanced by falling rates of divorce and widowhood.

The underlying socioeconomic and cultural factors that appear to have been bringing about the fertility decline can be loosely classified into those shifting the balance of economic benefits and costs of children and fertility regulation, those affecting social and administrative pressures bearing on fertility-related behavior, and those that alter people's internalized values concerning marriage, fertility, and family. Recent studies of the economics of children, mainly in Java, point to a rising child cost burden on families, especially related to needed educational expenses and to new consumption options. It is likely too that the economic implications of family size decisions have become more salient to parents in the years since 1967, with the establishment of comparative economic stability and political calm. Modern contraception (principally the pill and IUD) has become widely available through a village-based public distribution network and is virtually free. The family planning program has been significantly assisted in meeting ambitious performance targets by drawing on local government administrative resources, resulting in untypically high contraceptive use-rates at the lower end of the socioeconomic scale.

The influence of cultural change on fertility in Indonesia is for the most part undocumented, but changes likely to have contributed to the decline include the continuing expansion of education and the spread of consumer values. Preferences remain for fairly high fertility, however. Evidence from the mid-1970s shows family size preferences centered around 4-5 children, although the actual distribution of family size (and of children ever born) shows a substantial fraction of families with 3 children or below. The publicity activities of the family planning program have rapidly changed a situation of widespread ignorance of modern contraception into one of general familiarity.

While fertility would most likely have declined anyway in Indonesia in response to the post-1967 changes in economy and administration without the strong public-sector antinatalist program, there can be little doubt that the government's efforts have speeded the process, especially as it has affected the rural poor. On the other hand, earlier in the 1960s, even had the then government shown an interest in limiting population growth, the combination of high mortality, intense politicization of local issues, and an economy sliding into hyperinflation could hardly have provided a less favorable environment for fertility reduction. Either coherent local administration or a steady economic course could have paved the way for the demographic change; both in fact came with the New Order government.

CHAPTER 1

INTRODUCTION: DEMOGRAPHIC OVERVIEW

Fertility in Indonesia has been falling significantly, although by regional standards not spectacularly, over the past 15 years. This is the consensus among demographic analysts and is the conclusion of the National Academy of Sciences (NAS) Indonesia Panel; it is confirmed by early fertility estimates from the 1980 population census. The crude birth rate, between 40 and 45 per 1,000 in the early 1960s, may now be as low as 35. Total fertility (roughly, the number of children born to a woman over her reproductive life at the prevailing age-specific fertility rates) is estimated to have declined as follows:

1967-70	5.5
1970-75	5.1
1976-79	4.7

Taking the four-year averages for 1967-70 and 1976-79 as end points, the decline is around 15 percent over the full period; less securely based single-year estimates for 1978 and 1979 from the 1980 census show a continuation and possible steepening of this decline. The Indonesia Panel, with less reliance on the 1980 census, finds a regular downward trend in fertility from the late 1960s of about 1 percent a year. The purpose of the present study is to explore the reasons for this trend.

Interest in the course of Indonesia's fertility extends far beyond the country's borders. This is partly a consequence of sheer demographic weight: with more than 150 million people, Indonesia is the third largest developing country. Java's particular situation has long fascinated demographers, and the apparently inexorable rise in population on this small island has been a cause of growing alarm. While its growth rates remain quite high, the fertility decline is now transforming Java's demographic outlook. Another source of interest in the Indonesian experience lies in the continuing debate over the conditions of fertility decline and the extent to which family planning program activities influence fertility. Interpretations of the Indonesian case (together with those of a relatively few other countries--Thailand, Colombia, and Brazil, for example) have become central to this debate.

Indonesia was a relative latecomer to government involvement in family planning. Once started, however, the Indonesian family planning program was pursued with great vigor and effectiveness; lessons drawn from its design and administration have been applied in many other countries. However, the period of program growth (post-1967) also coincided with the establishment of a new political order following a decade of increasing conflict and, in the end, massive bloodshed. This political change brought with it comparative economic stability. It also brought, in part fortuitously, an enormous infusion of easily won government revenues that financed a surge of economic growth and the rapid expansion of schools, health programs, and numerous other government activities. As a result, expectations and, for many, everyday realities were transformed.

The combination of a new politico-administrative framework, programmatic action in family planning and on a number of other fronts, and pervasive social and economic change offers rich ground for the emergence of conflicting explanations for Indonesia's observed fertility trends. At the extremes, these explanations are simplistic, focusing on "single" factors--education, family planning program performance--that, while surely important, are only part of the socioeconomic and sociocultural matrix within which decisions that affect fertility are made. More subtlety is of course to be sought, both by adding other components of this matrix and by unbundling program packages like family planning. Unfortunately, subtlety is gained at the cost of a less sharp delineation of alternative hypotheses. Even if we had a much better empirical grasp of the case than we have in Indonesia, the nature of the analytical problem itself would still make the task one of devising persuasive explanations rather than reaching conclusive findings.

This introductory chapter sketches the main features of Indonesia's demography and then outlines the strategy of the analysis to follow.

OVERVIEW OF DEMOGRAPHIC PATTERNS

In population size, Indonesia dominates the Southeast Asian region. While it is not so large that comparisons with its smaller neighbors cease to be meaningful (as, it might be argued, is the case with India or China), regional variations in demography within Indonesia are often greater than those between Indonesia and other countries of the area. Indonesia-wide averages convey less information than do averages for countries more homogeneous in environment, society, and economy.

With this caveat, it nonetheless seems that Indonesia is now demographically much closer to "typical" Southeast Asian patterns than most observers would have predicted two decades ago. In the early 1960s Indonesia stood out in the region by reason of its high mortality and its apparently slim prospects for fertility reduction. By 1980 its death rate had fallen by one-third (although remaining somewhat above regional averages) and its birth rate probably by one-fifth. (Crude birth and death rates for 1976-79 derived from the 1980 census are 36 and 14 per 1,000 [Central Bureau of Statistics, 1982b:14].) In fertility, comparable World Bank data indicate that Indonesia stayed clustered with the Philippines and Thailand. The extent and pace of demographic transition in countries of insular and peninsular Southeast Asia over the last two decades, as recorded in these estimates, are compared in Figure 1 (World Bank, 1980, 1982b). (The broken 45° diagonal lines in the figure represent growth rate isoquants.)

It may be noted in passing that the trend line shown for Indonesia in Figure 1 is very similar to that for India over the same period (see Jain and Adlakha, 1982). India's death rate has declined from over 20 to around 14 and its birth rate from about 43 to 35 since the early 1960s. In both countries the relatively high mortality levels kept population growth well below the 3 percent range, while steady progress in lowering mortality prevented birth rate reductions from being translated into slower population growth.

Indonesia's broad demographic features can be seen from Tables 1 and 2. The geographic regions identified (see Figure 2) are those conventionally used in Indonesian population statistics. For further simplicity, Maluku and Irian Jaya are often grouped with Nusatenggara in a residual category "Other Islands," as in Table 2. Because of its demographic weight--it has more than 60

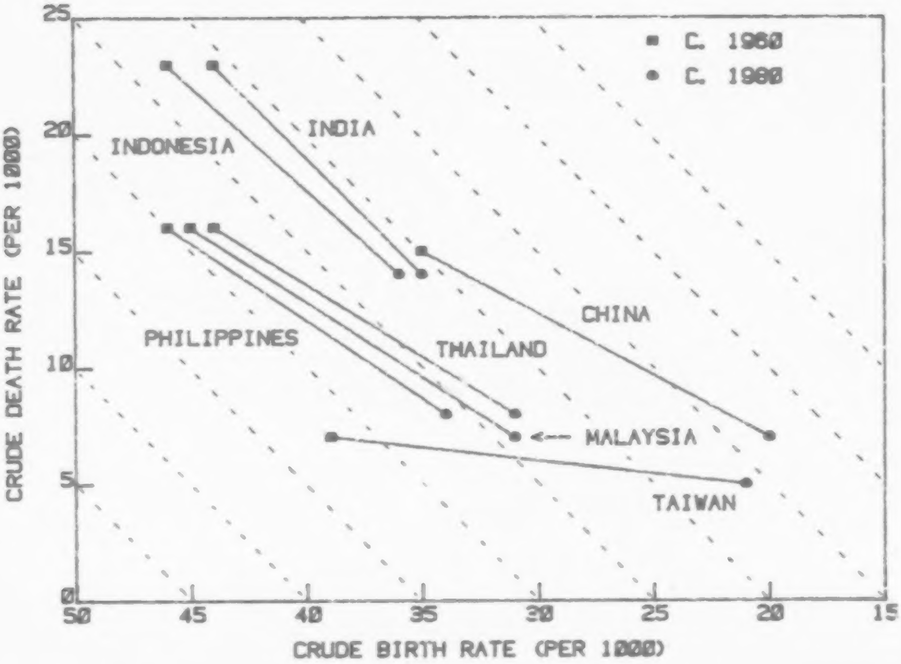

FIGURE 1 Demographic Transitions, c. 1960-80: Indonesia and Neighboring Countries

percent of the population--Java is frequently broken down into its five province-level divisions to give greater definition. If regions were selected to maximize interregional variation in patterns of demographic behavior in Indonesia, the major islands and island groupings used in these tables would not be the divisions chosen. Consideration of differences in rural ecology, culture and social organization, and economic conditions would lead to modification of this simple geographic picture. These complications, however, are left for later chapters in this study.

Java's population size and the extreme density contrast between Java (and Bali, with a density not far below it) and the rest of Indonesia are the dominant realities of Indonesia's demography. Natural increase in Java is appreciably less than that in the other main regions. Migration out of Java, principally to Sumatra, yields regional growth rates slightly more disparate than rates of natural increase.

TABLE 1 Population, Average Annual Growth Rate, and Population Density, by Region, 1961-80: Indonesia

Region	Population (millions)			Growth Rate (percent)		Density (persons/km^2)
	1961	1971	1980	1961-71	1971-80	1980
Java	63.0	76.1	91.3	1.9	2.0	690
Sumatra	15.7	20.8	28.8	2.8	3.3	59
Kalimantan	4.1	5.2	6.7	2.3	3.0	12
Sulawesi	7.1	8.5	10.4	1.9	2.2	55
Nusatenggara[a]	5.6	6.6	8.5	1.8	2.0	96
Maluku	0.8	1.1	1.4	2.5	2.9	19
Irian Jaya[b]	u	0.9	1.2	u	2.7	3
All Indonesia[a]	97.0	119.2	147.5	2.1	2.3	77

Note: u = unavailable.

[a] 1980 total includes East Timor (enumerated population 555,000), annexed in 1976; 1971-80 growth rate excludes East Timor.

[b] Not enumerated in 1961 (Indonesia total for 1961 includes guess of 700,000 for Irian Jaya).

Source: Census data (Central Bureau of Statistics, 1981a, 1981b).

TABLE 2 Crude Birth, Death, and Natural Increase Rates by Region, 1960s and 1970s: Indonesia

Region	Annual Average 1961-70			Annual Average 1971-80		
	Birth Rate (per 1,000)	Death Rate (per 1,000)	Rate of Natural Increase (percent)	Birth Rate (per 1,000)	Death Rate (per 1,000)	Rate of Natural Increase (percent)
	(1)	(2)	(3)	(4)	(5)	(6)
Java	41	21	2.0	35	15	2.0
Sumatra	47	22	2.5	40	13	2.7
Kalimantan	45	22	2.3	40	15	2.5
Sulawesi	46	23	2.3	41	15	2.6
Other Islands	44	24	2.0	45	17	2.8
Indonesia	43	22	2.1	38	15	2.3

Sources: (1) 1971 census estimates of age-specific fertility rates (Central Bureau of Statistics, 1976); adjusted mid-decade age distribution for Indonesia from Speare (n.d.); age distributions for regions taken from 1971 census with resulting birth rates adjusted to make their weighted average equal the estimate for Indonesia; (4) for Indonesia, average of age-specific fertility rates for 1971-75 and 1976-79 from Table 2, age distribution for 1976 from SUPAS II (Central Bureau of Statistics, 1978a); for regions, average 1974-78 age-specific fertility rates applied to 1979 age distributions from 1979 SUSENAS, with resulting birth rates adjusted to make their weighted average equal the estimate for Indonesia; (3) and (6) for Indonesia, average intercensal growth rates; for regions, computed as residuals from birth and death rates; (2) and (5) for Indonesia, computed as residuals; for regions, death rates implied by child mortality estimates (Table 3), adjusted for consistency with Indonesia estimate.

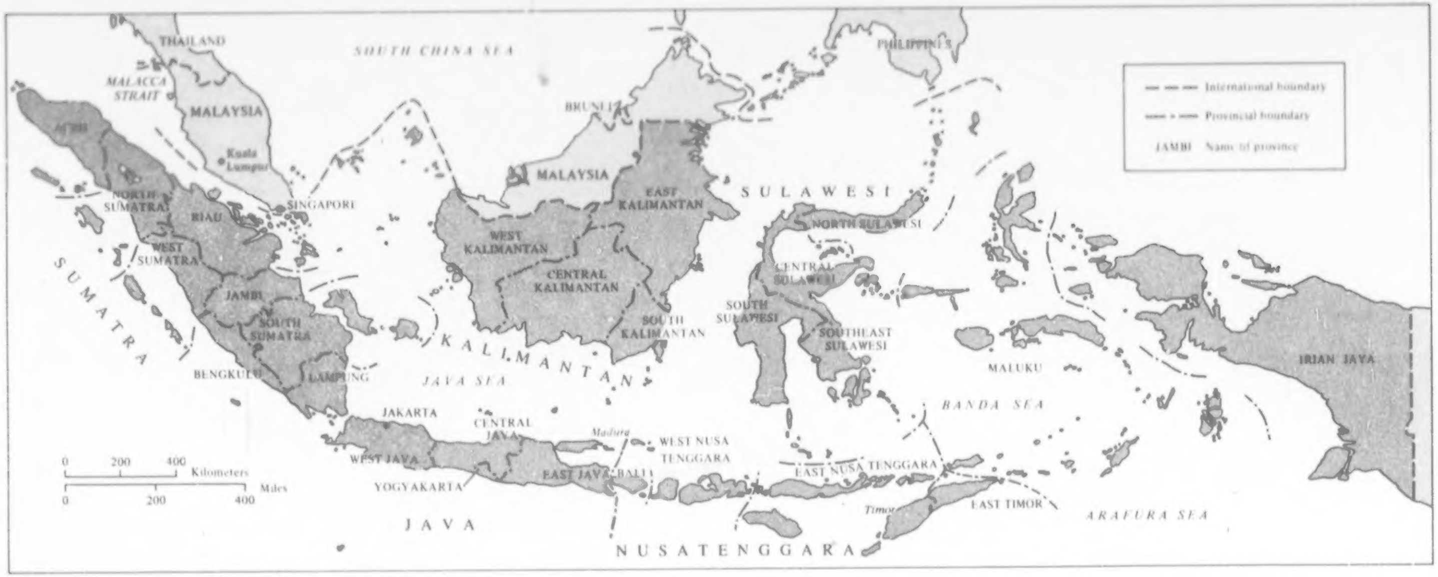
International boundary
Provincial boundary
JAMBI Name of province
THAILAND
MALACCA STRAIT
MALAYSIA
Kuala Lumpur
SINGAPORE
SOUTH CHINA SEA
BRUNEI
MALAYSIA
PHILIPPINES
ACEH
NORTH SUMATRA
RIAU
WEST SUMATRA
JAMBI
SOUTH SUMATRA
BENGKULU
LAMPUNG
S U M A T R A
WEST KALIMANTAN
CENTRAL KALIMANTAN
EAST KALIMANTAN
SOUTH KALIMANTAN
K A L I M A N T A N
JAVA SEA
JAKARTA
CENTRAL JAVA
WEST JAVA
YOGYAKARTA
EAST JAVA
Madura
BALI
J A V A
WEST NUSA TENGGARA
EAST NUSA TENGGARA
Timor
EAST TIMOR
N U S A T E N G G A R A
S U L A W E S I
NORTH SULAWESI
CENTRAL SULAWESI
SOUTH SULAWESI
SOUTHEAST SULAWESI
MALUKU
BANDA SEA
ARAFURA SEA
IRIAN JAYA
0 200 400 Kilometers
0 200 400 Miles

FIGURE 2 Map of Major Regions and Provinces: Indonesia

As Table 2 indicates, both fertility and mortality declines have been widespread in Indonesia. Regions outside Java, with the apparent exception of the eastern provinces (Nusatenggara, Maluku, Irian Jaya), have shown proportionately similar reductions in birth rates and greater reductions in death rates as compared to Java. The Indonesian transition now underway is not a Java-centered phenomenon.

Establishing consistent sets of regional vital rates for Indonesia is far from straightforward, as the source note to Table 2 implies. Age distribution data are often suspect, and census underenumeration is likely to have been significant in some regions. Registration data are as yet too incomplete for estimation of vital rates. It is particularly difficult to reconcile natural increase estimated as a residual from birth and death rates, as in Table 2, with natural increase derived from intercensal growth rates (Table 1) and estimates of interregional migration (for example, those of Speare, 1979, or Hugo, 1980). The discrepancies are largest in Sulawesi and Other Islands, regions where we would guess that census coverage errors play a substantial role. In Sumatra and Kalimantan, it is plausible that the scale of inmigration has been greater than assumed.

Fertility, being the main subject of this study, need not be discussed further in this overview; an additional word on mortality is called for, however. The main sources of mortality information in Indonesia are child mortality estimates from retrospective child survival data. These are the basis for the regional death rate differentials in Table 2. The regional pattern of child mortality and the strong decline Indonesia has experienced in this area since the late 1960s are shown in Table 3. (Fragmentary information from the 1961 census suggests that the decline in fact began in the 1950s.) If it can be assumed that Indonesia's age pattern of mortality at young ages follows the United Nation's "South Asian" model schedule (United Nations, 1982), the child mortality estimates for Indonesia shown in the table correspond to an infant mortality rate of 135 deaths per 1,000 births in 1967-69 and 100 in 1975-76. The NAS Indonesia Panel's conclusions, based on a more eclectic array of data, are similar: infant mortality rates of 130 per 1,000 in the early to mid-1960s and 105 ten years later.

Much less is known about adult mortality in Indonesia. In work undertaken for the Indonesia Panel, it was concluded that mortality was relatively low at ages 10-45

TABLE 3 Child Mortality Implied by 1971 and 1980 Census Retrospective Data on Child Survivorship, by Region: Indonesia

	q(2)			q(3)		
Region	1969	1976	Percent Decline	1967	1975	Percent Decline
Java	.176	.127	28	.191	.140	27
Sumatra	.179	.116	35	.194	.115	41
Kalimantan	.179	.127	29	.196	.144	27
Sulawesi	.187	.130	30	.205	.122	40
Other Islands	.207	.162	22	.224	.177	21
Indonesia	.179	.130	27	.194	.137	29

Note: q(x) is probability of death before exact age x.

Sources: 1967 and 1969 estimates (based on 1971 census data), Indonesia Panel (1982); 1975 and 1976 estimates computed from 1980 census data in Central Bureau of Statistics (1982a) using West model Brass-Sullivan regression coefficients.

and relatively high above 45 compared to standard model structures--a pattern characterized as "modern medicine-high poverty." Life tables were prepared for Indonesia for 1964 (females) and the mid-1970s (both sexes) by splicing together independent estimates of child and adult mortality; these show infant mortality rates of 159 and 105 per 1,000 births and life expectancies of 46 and 50 years (see McDonald, 1978; Indonesia Panel, 1982).

OUTLINE OF THIS STUDY

The objective of this study is to account for the onset and course of fertility decline in Indonesia--its timing and its pattern (both geographic and socioeconomic). In linking demographic outcomes to their social and economic context, it attempts to draw a detailed picture of the intermediate fertility variables--the so-called proximate determinants. As will become clear in Chapter 3, our knowledge of the proximate determinants of Indonesian fertility is as yet quite incomplete except for age at marriage and contraceptive use, although later analysis of the 1980 census will fill some of these gaps.

Chapter 2 sketches the background of contemporary demographic change in Indonesia: a murky picture of nineteenth- and early twentieth-century population growth, interrupted during the turbulent close of the colonial period, and coming for the first time into sharp focus in the 1960s; and a complex pattern of economic and administrative change pivoted on the decisive transformation of Indonesia's political order in the mid-1960s. Although necessarily highly abbreviated, the latter account should suggest the scope of Indonesia's socioeconomic development in the post-1967 period.

Chapter 3 presents detailed information on total fertility in Indonesia from the last two censuses and the 1976 and 1979 national surveys and assembles the scattered materials that say something about its proximate determinants. The accounting scheme devised by Bongaarts (1978, 1982), linking total fertility to indices of marriage, breastfeeding, contraception, and abortion, is used in part as a consistency check and in part as a means of inferring from incomplete data the magnitudes of particular proximate factors. Even for Java, few of these indices can be estimated with much assurance. In the rest of Indonesia, the data base is still less complete, and supporting assumptions as a result have had to be more heroic. Throughout Indonesia, estimates of time trends in proximate fertility determinants--a potent source of insight for analyzing fertility change--are not securely founded and need to be used with caution.

The system comprising the fertility outcome and its proximate determinants has lost any of the neatness as a dependent variable that is possessed, say, by a simple index of total fertility. The advantage gained is a highly valuable refining of the explicandum: we know much more about what has to be explained, and, just as important, what does not have to be explained. The danger to be avoided is that of trying to explain each of the proximate determinants separately while forgetting their interdependencies. Marriage, defensibly, has a set of socioeconomic and cultural determinants to some degree separate from that of fertility patterns within marriage; even here, however, and a fortiori for the proximate determinants of marital fertility, the possibility should be admitted that family-size considerations may be the dominant decision-making force.

Given this complexity of the dependent variable, there is little analytical gain to be expected from standard multivariate analysis. A more eclectic approach is required to reach an understanding of shifting fertility patterns--one that can examine the same phenomenon from a variety of angles. Chapter 4 is an attempt at such an approach, drawing on and, where needed, supplementing the empirical materials of Chapter 2.

The final chapter draws together the preceding account and tries to elicit its implications for future Indonesian fertility trends. Although the purpose of the present study is essentially analytical--seeking to understand what has happened in the recent past--one of its obvious motivations is to glean policy lessons for the future. These are discussed briefly in the concluding pages of the chapter.

CHAPTER 2

CONTEXT OF DEMOGRAPHIC CHANGE

Current demographic change in any society is both a consequence of behavioral patterns formed over past generations and a response to contemporary shifts in socioeconomic and cultural circumstances. Ideally, therefore, an understanding of Indonesia's modern fertility decline would be based on a sound knowledge of the factors contributing to the country's earlier population growth, and on careful documentation of relevant aspects of the economic, social, and cultural environment of current demographic behavior. For both, and especially for the historical dimension, only a rough sketch is possible here.

HISTORICAL POPULATION GROWTH

Indonesia's recorded demographic history, at the national level, gains a secure footing only with the 1930 census. Prior enumerations, chiefly those of 1905 and 1920, give possibly adequate population totals for Java, but are highly questionable elsewhere (see Widjojo, 1970). Even the 1930 census, while rich in ethnic detail, is virtually devoid of the age distribution data that are essential for most of modern demographic analysis. After 1930 there is a long gap in the record, spanning the Japanese occupation (1942-45) and the war of independence (1945-49), until the first modern census in 1961. Only in the 1970s did enough census and survey data become available to allow demographic estimates to be checked for consistency. (See the Appendix for a discussion of Indonesian data sources.) Hence it is a tenuous undertaking to reconstruct aggregate population growth for Indonesia prior to the most recent decades, let alone to infer the constituent rates of fertility and mortality. (Research focusing on local demographic patterns, however, offers somewhat more promise.)

Java's population, it is widely believed, experienced at least a three-fold, and possibly a four- or five-fold, increase over the nineteenth century (from below 10 to near 30 million). The implied average rate of increase, some 1.3-1.6 percent annually, is somewhat higher than India's in the same period. As there, this increase was variously viewed with colonial pride in the administrative and infrastructural developments whose efficacy it supposedly proved, or belated alarm at the absence of concomitant improvements in individual welfare. A further doubling of the population took place in the twentieth century up to the 1961 census. Outside Java, the growth rate is essentially unknown until well into this century. Table 4 sets out what we would consider the best-supported historical estimates of population

TABLE 4 Population Size and Growth Rate in the Nineteenth and Twentieth Centuries: Indonesia

Year	Java	Other Regions	All Indonesia
Population Size (millions)			
1815	6-10	u	u
1850	12-13	u	u
1905	30.1	u	u
1930	41.7	19.0	60.7
1961	63.0	34.1	97.1
1980	91.3	56.2	147.5
Annual Growth Rate (percent per year)			
1815-1850	0.7-1.4	u	u
1850-1905	1.5	u	u
1905-1930	1.3	u	u
1930-1961	1.3	1.9	1.5
1961-1980	2.0	2.6	2.2

Note: u = unavailable or gross underenumeration.

Sources: 1815, 1850: Breman (1963), Peper (1970); 1905-1980: census totals (Widjojo, 1970; Central Bureau of Statistics, 1981b).

size and growth rates, together with recent census totals. (See Widjojo [1970] for a thorough evaluation of Dutch colonial demographic statistics, and Breman [1963] and Peper [1970] for proposed new population trajectories for nineteenth-century Java.)

Theories of Population Growth in Java

The explanation of Java's sustained population growth in colonial times is of more than historical interest. It could potentially throw much light on the current fertility decline--in particular, on the issue of whether this decline is better seen as a transition from a "natural" to a "controlled" fertility regime or as an adaptation to cultural and socioeconomic change. Consider the following three alternative explanatory hypotheses.

- A straightforward Malthusian position would be that Java's fertility until the last 15 years or so was, in the technical sense of the term, "natural"--that is, that the factors holding the birth rate below its biological upper limit were not connected to any deliberate parental effort to regulate family size. A fortiori, the same position would also see infant and child mortality as natural. (Lengthy breastfeeding practiced for the child's or mother's health is consistent with natural fertility; so, too, would be adherence to a cultural tradition of long postpartum or terminal sexual abstinence not consciously tied to individual demographic interests.) Java's population growth could then be explained by a minimal colonial government role in reducing catastrophic peaks in mortality through such measures as improved transport, expansion of irrigation, quarantine, and so on. Such changes would have allowed the population to increase under a more or less constant force of fertility with fewer recurrent setbacks. This roughly parallels the "Princeton" view of preindustrial Europe (Coale, 1975), and resembles the conclusion reached by Knodel and Debavalya (1978) on pretransition Thailand. It is the case assumed by many writers (for example, van de Walle, 1973) for Java. Accommodation of sustained population growth in turn drives and directs technological change, favoring in particular the process of labor intensification in agriculture, and compels increasing reliance on very low-productivity rural activities.

- The classical economic argument that fertility responds to changes in the demand for labor offers a different kind of explanation. The Dutch built up a large estate sector in Java, producing export crops such as sugar, coffee, and indigo. To support this sector, a substantial amount of both labor and land were in effect withdrawn from the peasant economy--involuntarily for the families concerned and with meager wage compensation of labor services. This situation may have elicited a demographic response--either higher fertility or lower child mortality--as families struggled to survive on a truncated resource base by substituting new labor for land. A more benign variant of this argument might see the demographic response more positively, as the result of families trying to take advantage of the new labor opportunities created by the export sector. The former case is set out by White (1973), who speculates that the adjustment mechanism may have been a conscious or unconscious reallocation of food from parents to children as child survival became more important to family welfare. Alexander and Alexander (1979) adduce some supporting evidence for a labor-supply response by families, drawn from their study of Pasuruan, a major East Java sugar cultivation region, in the nineteenth century. A less specific labor-demand case for colonial population growth in Java is made in Keyfitz (1965).

- Neither of the previous hypotheses pays much attention to the dimension of social organization beyond the family. Yet the Javanese village played an important intermediary role in relations between the estate and peasant economies. In the sugar areas particularly (Java prior to the Great Depression was one of the world's major sugar producers), the centrals negotiated land rental agreements with village leaders rather than with individual landholders. The effect was to create (some have argued, preserve) a system of communal landownership under which at regular intervals, usually each year, families in the village would be allotted portions of the land not under cane at the time, to some degree according to their need. This perpetual reallocation of land, perhaps together with other communal customs that existed widely throughout Java, served to level intravillage differences and plausibly to diminish economic incentives to limit family size. Families, in effect, were precluded from operating as economically autonomous peasant proprietors--for whom control over reproduction would be an important welfare instrument. This argument is at least implicit in Kolff (1929), C. Geertz (1963), and Aass (1980).

If the first of these hypotheses was in fact the case, the recent widespread adoption of modern contraception has been a radical cultural innovation--a sudden spreading of the realization that fertility is indeed controllable and that family-size limitation is in one's own interests. The puzzle to be solved would still be large, but fairly circumscribed. If the second hypothesis was borne out, families can be assumed to have always acted in their best interests, with demographic choices included among those that were open to them. Family-size limitation may have been seen as too costly, or may have been avoided because mortality risks were too high, but under the circumstances a roughly optimal welfare strategy would have been followed. As price relativities altered over time, appropriate adjustments in behavior, fertility included, would have been made. In particular, fertility declines would have followed a fall in expected child mortality, a lower cost of fertility regulation, and a higher net burden of childraising.

The third hypothesis does not intrinsically deny that families could act purposefully in their own demographic interests, but suggests that the specific institutional arrangements they confronted may have eroded the value of such actions and would often have favored alternative kinds of response. More generally, the hypothesis stresses the role of societal institutions other than the family and colonial estates in governing fertility. The picture is thus considerably more variegated than one in which an imposed labor demand elicits a fertility increase. The social arrangements within which individuals and families operate are seen as having their own continuities and their own kinds and time-scale of response to changing technological and political conditions. These arrangements set many of the constraints, cultural as well as economic, within which individual demographic behavior must be worked out. Detailing how and why they shift over time becomes an important part of the explanation for fertility change.

Not surprisingly, the sketchy evidence on historical Java so far assembled--both statistical data on the rural economy and population and qualitative studies of rural institutions--does not go far toward settling these fundamental differences in interpretation. (The differences are not without political significance: pure labor-demand explanations accord better with a class analysis of Javanese society; institutional explanations with a picture in which class divisions are muted or overlain by other groupings.) The evidence does, however, seem to support the feasibility of consciously adaptive fertility responses in historical Java and suggests that these played some part in the resulting pattern of population growth.

The practice of postpartum and terminal abstinence has probably been widespread in central and eastern Java for many generations, according, as it does, with Javanese cultural values of asceticism and self-control. Under then-prevailing mortality, only three out of five children born would be expected to reach adulthood. Demographically, abstinence would have had the effect of prolonging breastfeeding (preventing it from being interrupted by pregnancy) and thus enhancing child survival chances. Although culturally rooted, this behavior would have permitted "fine-tuning" of fertility--long before the advent of modern contraception--in response to changes in individual circumstances. Given its presence, it is difficult to think of Java's pretransition fertility as wholly "natural."

No firm conclusions can be drawn on the degree to which such fertility adjustments were in fact made, given the structure of the economic incentives and the high child mortality risks. The matter is still, however, an active research question. In Chapters 3 and 4 we encounter the same set of issues, although with better documentation, in attempting to account for Indonesian demographic change in the recent past.

Depression, Occupation, Revolution, 1932-49

The 1930s and 1940s witnessed major disruptions in Indonesian society and economy as the colonial era came to an end in economic depression and war. These events had demographic repercussions, the magnitude of which can be read, if only imperfectly, in later age distributions. First-generaion echo effects of the small surviving cohorts from this period would have contributed to a birth rate decline in the 1960s.

Three approaches can be used to shed light on vital rates in Indonesia over these years. First, the events themselves can be examined for their likely demographic impact, both in qualitative terms and by drawing on the fragmentary statistical records of the time. Second, the prewar (1930) census can be linked to postwar enumerations by a projection under fertility and mortality assumptions designed to minimize discrepancies in size and age structure between the projected and enumerated populations. Third, the postwar census data, corrected as far as possible for age misstatement errors, can be projected backward to recreate successive past birth cohorts.

The first of these approaches provides the a priori expectation that net reproduction was low throughout much of the 1930s and 1940s, especially the early 1940s. The Great Depression hurt the Indonesian economy badly, causing the collapse of its major agricultural export industries. Export revenues in 1933 were less than one-third of their level in 1928, and subsequent recovery was slow and partial. Then in 1942 came the Japanese occupation with its wide use of forced labor and harsh food procurement policies. Scattered registration data on Java show death rates of 30-40 per 1,000 in some areas in 1944 (see Indonesia Panel, 1982). Finally, there were 4 years of struggle against the returning Dutch forces to confirm the 1945 declaration of national independence; though not uniformly intense, this resulted in considerable destruction of fixed capital.

It is reasonable to assume that Indonesia's population in 1930 was stable. (For strong supporting evidence of stability see Feeney, 1979b.) On this basis, and with estimated birth and death rates for the time, the census total is supplied with an age structure. Then, using a procedure somewhat like that suggested by Keyfitz and Murphy (1965), a time-series of age-specific birth and death rates can be constructed that projects this population forward to 1961 and subsequent census years, in reasonable agreement with the enumerated population sizes and age structures. The result should be a consistent, although not unique, fertility and mortality time series. (Poor-quality age distribution data in the early postwar enumerations leave plenty of room for differing judgments, however.) One such series was developed for Java by Widjojo (1970)--initially without a postwar age distribution to test against, but subsequently supported by the 1961 census. Another, for Indonesia as a whole and using the 1971 census and the 1976 Intercensal Population Survey (SUPAS I), was prepared by Speare (n.d.). Both show a fertility drop and mortality rise occurring in the 1940s: for Widjojo (Java), the birth rate fell 13 percent and the death rate rose 16 percent compared to 1935-40; for Speare (Indonesia), the corresponding changes were 9 percent and 15 percent.

These trajectories were initially selected to conform to preconceptions about 1930-61 demographic trends. A less biased starting point would be the postwar age distributions themselves. An innovative procedure for correcting age-heaping, developed by Feeney (1979a), allows these distributions to be cleaned and hence to become usable as a basis for inferring past levels of fertility and mortality. The method in concept is very simple: the ratio of population in a given age group, say 35-39, in two postwar enumerations five years apart, say 1971 and 1976, can be taken as an estimate (under obvious mortality and migration assumptions) of the ratio of births in the two successive periods in the past--in this case, the two five-year periods following 1931. Applying this method in its analysis of age distribution errors, the Indonesia Panel (1982) concluded that there was declining fertility (or rather, fertility net of infant and child mortality) at a slowly increasing rate during 1932-37, 1938-41 and 1942-47, with a low point reached during the last period. After 1947, and again in some indeterminate combination, fertility evidently rose and infant and child mortality fell, until the ratio of births in successive five-year periods nearly reached the value it had maintained prior to 1932.

Further confirmation of this sequence can be read from the cumulative fertility estimates by age of woman in the postwar censuses. East Java, the only extensive province for which the 1961 census results were tabulated, can be used for illustration. The reported average number of children born to ever-married women aged 35-44 and 45-54 in East Java in three successive ten-year birth cohorts (drawing on 1961, 1971, and 1980 census data) is as follows:

Birth Cohort	35-44	45-54
1906-16		4.25
1916-26	3.91	3.79
1928-36	3.99	4.48

(The empty cell results from the absence of any source of data for around 1950.) The 1916-26 birth cohort experienced its peak reproductive years in the 1940s. The fertility of the cohorts before and after it would have been much less influenced by events in that decade. The last column clearly shows the dip in completed fertility; the 35-44 column confirms the upswing.

Independence and After, 1950-67

The record of demographic trends in the 1950s has little better empirical grounding than estimates made for the previous two decades. Birth and death rates seem to have returned to their prewar levels, with fertility constant (aside from a possible surge of deferred births early in the decade) and mortality resuming a slow decline. Table 5, analogous to the one above but for all Indonesia (and taking five-year age groups and birth cohorts), shows the fertility recovery: average completed parity increases from 4.90 for the 1920-25 birth cohort to 5.52 for the 1930-45 cohort--the latter having its childbearing years in the 1950s and 1960s.

Maternity histories gathered in the 1973 Fertility-Mortality Survey and the 1976 Indonesia Fertility Survey (SUPAS III) both suggest fairly constant fertility levels through the 1960s. The latter survey, for example, estimates a uniform total fertility rate in Java and Bali of 5.5 from 1962 to 1968 (Indonesia Fertility Survey, 1978: Table 6.10). The 1973 survey suggests a slight increase in total fertility in Java through the 1960s but constancy in Sumatra and Sulawesi (McDonald et al., 1976:Table 3.4). The crude birth rate probably began to decline in the 1960s as the small 1940s birth cohorts entered child-

TABLE 5 Average Parity of Ever-Married Women by Age and Birth Cohort: Indonesia

	Age Group				
Birth Cohort	25-29	30-34	35-39	40-44	45-49
1920-25					4.90
1925-30				4.98	5.32
1930-35			4.90	5.33	5.52
1935-40		4.21	5.10	5.38	
1940-45	3.10	4.18	5.01		
1945-50	2.91	3.98			
1950-55	2.76				

Sources: Upper diagonal (1971 census data), Cho et al. (1980: Appendix Table 1) adjusted by proportions ever married; middle diagonal (1976 SUPAS II data), Central Bureau of Statistics (1979a:Table 1.8); lower diagonal (1980 census data), Central Bureau of Statistics (1982a:Table 20).

bearing ages; the average rate for the 1960s of 43, given in Table 2, may well have been several points higher at the beginning of the decade.

Retrospective child mortality estimates from the 1961 and 1971 censuses for the three provinces (all in Java) where the former data exist show declines over 10 years from the early 1950s of around 25-35 percent (McNicoll and Mamas, 1973:43)--a trend that, as noted earlier (Table 3), has continued at about the same pace in the 1970s. It is likely that the rest of Indonesia experienced a similar fall in child mortality in the 1950s. Food supplies and distribution recovered from their wartime dislocations; the economy was reaping the benefits of the Korean War boom in export prices; and new public health measures, such as a malaria control program, were being put into effect. Compared to that of other countries in the region, Indonesia's mortality was still high well into the 1960s. The average death rate for Indonesia in the 1960s was estimated earlier to be 22 per 1,000 (Table 2). In the only Indonesian life table for that period that has been constructed using both child and adult mortality information (for around 1964), female life expectancy is estimated to be 46 years (McDonald, 1978). (It may be noted that the killings that followed the 1965 coup attempt, numbering possibly in the hundreds of thousands, would have had a barely perceptible impact on the overall death rate in Indonesia: if a normal year in the 1960s showed a crude death rate of 22, in 1965 and 1966 the rate may have risen to 23 or 24.)

SOCIAL CHANGE AND DEVELOPMENT SINCE 1967

A decisive turning point in Indonesia's history as an independent nation came in 1966-67 with the transfer of power from President Sukarno to President Suharto and the establishment of what immediately became known as the New Order government. The development effort over the preceding 15 years is well capsulated by Arndt (1975:85):

> From 1950 until 1958, successive governments struggled to promote economic development in conditions of chronic inflation, balance-of-payments difficulties and increasing political instability. From 1958 until 1965, under Guided Democracy, as orderly processes of government, including the capacity to tax, gradually disin-

> tegrated and inflation turned into hyperinflation, as everchanging and multiplying regulations superimposed new direct controls on unenforceable older ones, as output of nationalized estates and industrial plants declined and smuggling further dissipated the country's dwindling foreign exchange earnings, as Sukarno's diminishing capacity to raise further foreign credits prompted him to tell the world to 'go to hell' with its foreign aid, economic activity continued despite rather than because of the government.

Deepening economic disarray and increasing political tension between Communist and Muslim parties culminated in a Communist-supported attempted coup in September 1965, followed for several months by violent reprisals against Communist Party members and sympathizers throughout the country. While the present study is primarily concerned with the post-1967 period, some of the roots of recent demographic change are to be found in these earlier years and in the traumatic period of the middle 1960s.

The following brief survey outlines the recent course of economic growth in Indonesia and the changes in social organization and local administrative arrangements that have taken place. Some of the factors likely to be bringing about sociocultural change are also noted.

Economic Growth

In the 1960s Indonesia's economic future looked bleak. Economic mismanagement was reflected in a declining volume of exports, a balance-of-payments crisis, stagnant agricultural productivity, a highly visible deterioration of capital stock, and a cost-of-living index that on a base of 100 in 1960 had passed 250,000 by the end of 1967. A prominent geographer (Fisher, 1967) argued persuasively that the nation's natural resource base, far from being a vast potential source of wealth as so much of the political rhetoric of the time averred, was in fact quite modest when set against the large population.

The turnaround in economic outlook came remarkably quickly in the late 1960s and early 1970s. Major economic changes in the New Order regime can be listed simply: the rapid achievement of comparatively stable prices after the hyperinflation of the mid-1960s; a strong recovery of export revenues, particularly deriving from petroleum and logging, and of course expanding after 1974 with the OPEC price increases; the development of revenue-sharing programs for provincial and local government; large investments in economic infrastructure (communications, roads, irrigation); and successful promotion of "green revolution" technologies and inputs.

The drastic stabilization program of the late 1960s left the economy well placed to benefit from the strong impetus given it by the jump in oil and gas prices. As Table 6 shows, Indonesia's gross domestic product (GDP) grew during the 1970s at about the same rate as Thailand's and Malaysia's, both countries that are in the strong "second tier" (behind South Korea, Taiwan, Hong Kong, and Singapore) of the dynamic East Asian regional economy. Per capita income (admittedly a crude indicator of welfare in an oil-export economy), while still low by East Asian standards, has now moved well ahead of South Asian levels. In 1981 Indonesia graduated from being a "low-income" country to become "middle-income" in the World Bank's categorization.

Indonesia's export growth in the 1970s--6.5 percent annually in quantum terms--yielded an increase in export revenues averaging over 20 percent per year in constant dollars. Overwhelmingly, exports were and remain raw materials. In 1980, for example, out of total exports of $22 billion, manufactured exports made up less than $500 million (World Bank, 1982b). On a per capita basis, as the last column of Table 6 indicates, Indonesia's success in exporting manufactures has been minimal, even compared to China and India, and contrasts strikingly in this respect with the Philippines, Thailand, and Malaysia.

The export boom and a substantial flow of foreign assistance have financed large development budgets. Investment as a proportion of GDP increased from 8 percent in 1967 to over 20 percent a decade later. There have been important shifts in both sectoral and regional distribution of product. Agriculture's share of GDP fell from around 50 percent in 1969 to below 30 percent in 1980--a drop wholly taken up by the expansion of the mining sector (from 5 percent to over 25 percent of GDP, although at constant prices mining shows almost no change); manufacturing and utilities contributed some 10 percent of GDP in 1980, about the same as they had a decade earlier (Dick, 1982). The regions benefiting from natural resource development, principally oil and timber, are all outside Java (and also outside Nusatenggara). Balancing the evident self-interest of resource-rich

TABLE 6 Comparative Economic Development Performance, 1970-80: Indonesia and Selected Other Asian Countries

Country	GNP per Capita ($) 1980	Av. Growth Rate of GDP (percent p.a. at const. prices) 1970-80	Agricultural Sector		Av. Growth Rate of Exports (percent p.a.) 1970-80	Exports per Capita ($) 1980	Manuf. Exports per Capita ($) 1979
			Share of GDP (percent) 1980	Share of Labor Force (percent) 1980			
Indonesia	430	7.6	26	58	8.7	149	3
China	290	5.8	31	71	u	19	5
India	240	3.6	37	69	3.7	10	6
Malaysia	1,620	7.8	24	50	7.4	991	141
Pakistan	300	4.7	31	57	1.2	31	14
Philippines	690	6.3	23	46	7.0	122	33
South Korea	1,520	9.5	16	34	23.0	459	348
Thailand	670	7.2	25	76	11.8	138	28

Note: u = unavailable.

Source: World Bank (1982b). Reprinted by permission.

provinces against demands for interregional equity has been a considerable accomplishment of the New Order government; improvements in roads and interisland transport and large investments in telecommunications have also contributed much to the integration of the national economy.

For the subject of this study, we are particularly interested in how these aggregate economic changes have affected people's livelihoods, especially among families at the broad base of the income distribution. Consider the demographically dominant rural sector. Among the 80 percent of Indonesian families living in rural areas, a steadily shrinking proportion are landholders, and, on Java at least, minuscule plots are the norm. Writing of Java in the early 1970s, Sajogyo (1973:68) divided the then 12 million or so agricultural households into three categories: (1) 4 million farmers with farm sizes above 0.5 ha., accounting for 80 percent of total farmland (and a somewhat higher proportion of irrigated rice land); (2) another 4 million marginal farmers (0.1 to 0.5 ha.; "they could be called 'transitional farmers' if only one could tell what place and future [they had] to go"); and (3) 2 million near landless (below 0.1 ha.) and possibly the same number fully landless. Population growth steadily enlarges the numbers on the bottom rungs of this ladder: by 1980 fewer than 3 million households on Java farmed more than 0.5 ha. (Central Bureau of Statistics, 1981c: Table 14). Outside Java (and Bali), cultivated areas are still expanding--by 23 percent between the agricultural censuses of 1963 and 1973--under local population growth and resettlement from Java and with further extension of estate agriculture. More than half of farm households operate farms greater than 0.5 ha., although the larger area is partly offset by poorer-quality land and less developed irrigation than on Java (Central Bureau of Statistics, 1981c:Table 14; Leiserson et al., 1980:28).

The seed-fertilizer revolution in rice production (rice contributes around two-thirds of Indonesia's total food crop production expressed in calorie equivalents) firmly took hold in Indonesia during the 1970s, benefiting, as elsewhere, the larger farmers first and most. Substantial investments have been made in rehabilitating irrigation systems and in beginning to combat serious problems of erosion and deforestation. Aggregate results have been impressive: a 50 percent increase in rice output over the decade, mostly attributable to the high yields of the new rice varieties under heavy fertilizer use and to more extensive double and triple cropping permitted by their shorter growing season and the improvements in irrigation systems (Warr, 1980).

In man-days per hectare, the high-yielding varieties absorb slightly more labor than the traditional varieties. Other, opposing changes in labor utilization that are not directly tied to the green revolution are probably more significant, however. These include substitution of sickles for hand knives in harvesting; in some regions the use of small tractors for ploughing and transporting paddy, and rotary weeders to replace hand weeding; the spreading practice by landholders of contracting out the task of harvesting instead of letting anyone participate and receive a share; and the introduction of mechanical rice hullers, which in short order have eliminated the formerly standard practice of hand pounding. These changes have reduced the numbers of people (per unit area) participating in rice production, especially women. (The subject is intensively examined in various studies of the Agro-Economic Survey--for example, Collier et al., 1974; see also Utami and Ihalauw, 1973, and Hayami and Hafid, 1979.)

For the rural population as a whole it is possible to overemphasize these changes, however. "Occupational multiplicity" has probably characterized rural workers in Java for decades, with rice cultivation one (albeit usually the most remunerative) among many income-generating activities, agricultural and nonagricultural (see White, 1976, and Hart, 1978, for illustrative data on time use in village Java). High rates of landlessness are similarly not new in Java. Trends in individual or family economic conditions cannot be read from information on a single industry, even one as large as rice. The improved agricultural productivity and the other resources flowing into the domestic economy could have had more than compensating employment and welfare effects. We must instead look at overall patterns of labor absorption, outside as well as within the farm sector, and at trends in real wages and incomes.

A recent World Bank study computes Indonesian employment growth based on census and labor force survey (SAKERNAS) data in the 1970s by sector: overall employment grew at 3.3 percent per year; agricultural employment by 2.2 percent; manufacturing and mining by 2.7 and 3.1 percent, respectively; and construction, trade, and services by 6.2 percent (Mazumdar and Lluch, 1980). The expansion of trade and services in rural areas in the

1970s was particularly notable, with these categories accounting for nearly as many people newly employed as all of agriculture. Unfortunatly, there is almost no hard information on the distribution of activities within trade and services, to permit distinguishing between those that are comparatively productive and those that have a social (and often private) product close to zero.

There is little to be learned from dividing employment growth into rural and urban. Improvements in transport have been among the most significant economic changes in recent years in Indonesia. Total motor vehicle registrations have grown by an average 13 percent per year over the 1960s and 1970s. By the late 1970s, motorcycle ownership was above 16 per 1,000, four times its level in 1970. One household in three in both rural and urban areas owned a bicycle (Central Bureau of Statistics, 1980, 1982a). What has come to be known as the "Colt revolution," named after the Mitsubishi pickup truck that is converted to serve as a minibus, has transformed rural and intercity public transport. Labor markets thus have been broadened, and some of the familiar distinctions between urban and rural areas have come to be obscured. The rapid expansion of commuting and "circular migration" by rural workers in the 1970s in Java and Bali is well documented (see particularly Hugo, 1978, 1981, and Mantra, 1981). Better transport also influences trading market areas. The narrowing of price differentials formerly sustained by transport frictions has eroded opportunities for microsale retailing and arbitrage just at the time when more people are seeking those opportunities.

Two kinds of information promise to permit judgment about trends in economic conditions at the family level, circumventing the intricacies of seasonality and multiple occupations that cloud Indonesia's labor force data. One is statistics on wages and consumption expenditures and on income-sensitive characteristics such as infant mortality; the other is the casual empiricism of informed observers.

On the first of these, most of the evidence points to rough constancy of real wages for unskilled labor since the late 1960s, although with substantial year-to-year fluctuations (see, for example, Makali and Hartoyo, 1978; Mazumdar and Lluch, 1980). On the other hand, per capita GDP has been rising at about 5 percent per year in real terms over this period (in the first half of the 1960s it was falling), and, more to the point, there have been substantial increases in real per capita consumption levels.

Sundrum (1979) estimates the consumption increases between 1970 and 1976 to be 44 percent in urban Java, 19 percent in rural Java, and 9 and 8 percent, respectively, in urban and rural areas outside Java. The main beneficiaries of these gains have been those employed in the more capital-intensive industries and in the modern service sector (particularly government), as well as the larger rice farmers. Whether any benefits have also been felt by those at the bottom of the income distribution has been an issue of contention, but the evidence increasingly suggests that they have. Household consumption data from the National Socioeconomic Surveys (SUSENAS) of 1969-70 and 1976, although not to be accepted uncritically, point to an improvement over that period for all income groups both in Java and in other regions (Leiserson et al., 1980:82).

Child mortality estimates by birth cohort and parents' socioeconomic characteristics have been calculated by McDonald (1980) from the 1976 Indonesia Fertility Survey (SUPAS III) of Java and Bali. The percentage of children dying before age 5 in three birth cohorts (those born before 1961, during 1961-66, and during 1966-71), classified by education of father, show declines over time in each category and a slight narrowing of the large differentials by education:

Education of Father	Before 1961	1961-66	1966-71
None	27	22	17
Primary	23	20	16
Secondary	12	11	9

While more than just economic forces are involved here, the pattern certainly suggests improving levels of welfare among those at the bottom of this ladder.

Anecdotal evidence of trends in economic well-being, not necessarily less reliable than these statistics, generally supports this picture. Critchfield's 1979 travels in Java, surveying conditions in 35 villages and comparing them with his own and his respondents' memories of the 1960s and early 1970s, is strikingly upbeat (Critchfield, 1981:178):

> There were a few pockets of deep, grinding poverty--wherever there was too much water (flood plains) or too little (dry upland plateaus or

> brackish coastal flats). With these few exceptions, Java had prospered dramatically between 1974 and 1979. When asked 'Are you richer or poorer than you were ten years ago?' every single one of a couple of hundred villagers replied that he was better off . . . . The landless poor had not been left out; daily field wages had gone up, on the average and in terms of the food they could buy, by a quarter to a half kilo of rice per day since 1970.

While somewhat Panglossian in tone and devoid of sensitivity to local-level realpolitik, Critchfield's observations cannot be dismissed as uninformed. Systematic resurveys of villages earlier subjected to intensive study, hence relying less on casual empiricism, also record significant economic growth associated with rice intensification and access to urban labor markets (see Singarimbun, 1976, and Edmundson, 1977). This is not, of course, to deny that expanded economic horizons, a more complete monetization of exchange relations, and jobs located farther from home can yield subjective welfare losses unreflected in economic indices or in responses to artless questions about whether one is richer or poorer.

Social Organization and Local Administration

Social organization at the local level in Indonesia varies widely: in some regions (Java and Bali, Aceh, South Sulawesi), it is essentially territorial, with kin ties beyond the immediate family comparatively weak and villages consisting mostly of unrelated families; in others (much of the rest of Sumatra and North and Central Sulawesi, for example), kinship is a more salient principle of social organization, with clans or other kin groupings overlaying and sometimes forming the basis for territorial communities (see Ter Haar, 1962:Chapter 1; Ter Haar identifies more than 12 distinctive types of community organization in Indonesia).

Such differences, of course, are reflections of Indonesia's complex ethnic map. Fortunately, we need be concerned here only with the demographically dominant ethnolinguistic groups. Based on the 1980 rural population distribution according to language spoken in the home (Central Bureau of Statistics, 1982a:Table 10) these groups are as follows: Javanese (42 percent of the population, mostly in Central and East Java, Yogyakarta, and the Sumatran provinces of Lampung and North Sumatra); Sundanese (15 percent, in West Java); Madurese (5 percent, in Madura and mainland East Java); Buginese and Macassarese (3-4 percent, mostly in South Sulawesi); Minangkabau (2.5 percent, mostly in West Sumatra); Batak (2.5 percent, mostly in North Sumatra); and Balinese (2 percent). In addition, there is a somewhat ill-defined group known as "coastal Malays," difficult to identify in the 1980 census, but who in 1930 were said to make up 7.5 percent of the population, mainly in eastern Sumatra and the coastal areas of Kalimantan (see H. Geertz, 1963), and the ethnic Chinese, perhaps 2-3 percent, dispersed chiefly in urban areas across the country. Of these, only the Minangkabau and Batak, and to a much lesser extent the Macassarese and Buginese, would be characterized by the potentially strong influence of an extended kin group on the behavior of individuals or families (see Kahn, 1980; Singarimbun, 1975; Lineton, 1975; for overviews of Indonesian regional sociocultural patterns, see H. Geertz, 1963, and Peacock, 1973). Thus, weighting by population directs our attention primarily to territorial-based groupings.

In the Javanese areas of rural Java, the territorial unit that is the basis of face-to-face social relations and primary loyalties is the natural village or hamlet (pedukuhan, kampung), or a smaller and less-defined neighborhood group within it. Comprising perhaps one or two hundred households, the pedukuhan is described by Jay (1969:290):

> It is the smallest and most solidary of all Javanese governmental units. To each of its members it is the most important unit for social identification beyond the nuclear family, hearthhold, and household . . . . It has a name, a specific citizenry, a defined territory, a governmental apparatus, a certain amount of land, . . . and a number of spirits identified exclusively with the village.

Its cohesiveness may nevertheless be weak: C. Geertz (1963:103) compares the Javanese village to "the other formless human community, the American suburb." What corporateness does exist may be largely an outcome of hierarchical relationships within the village by social status and age. In most other regions of Indonesia, natural villages of some kind are similarly found to be significant units of social identification: in some cases, as in Bali, still strong organic entities; in others, as in the Sundanese areas of Java, much weaker and perhaps also so (see H. Geertz, 1959; Palmer, 1959; Hofsteede, 1971). This variation in the nature of the local community is plausibly an important factor in explaining regional differences in the performance of development programs.

Whatever their prior strength, rural community ties could be expected to be loosened by the economic changes discussed above and by the greater geographic mobility of villagers in recent years. The areas of life in which community influence is felt are likely to be narrowed and traditional authority structures weakened. Specific evidence on such trends, one way or the other, is lacking, however. Migration to the cities, a drastic shift in community setting, is of course also relevant in this context: rural-urban migration has raised the proportion of the population in urban areas from 15 percent in 1961 to 22 percent in 1980. If the rural population had grown at the national average rate over these two decades, it would have been larger by 10 percent (11 million people) than in fact it was.

In contrast to local-level social organization, more is known about recent shifts in local administrative arrangements in Indonesia. The formal administrative hierarchy is set out in Table 7. At the lowest level in rural areas is the administrative village (*kelurahan*, *desa*--the latter term confusing because the Javanese word *desa* means a *pedukuhan*), usually comprising a group of hamlets (perhaps 6-8 on average), sometimes clustered, in other cases strung out over a wide area. Its head, the *lurah*, is an elected official, although his term is indefinite, and in some regions the post is virtually hereditary. The higher administrative levels are headed by appointed officials (*camat*, *bupati*, and provincial governor). Roughly paralleling this civil administration is a military bureaucracy extending downward from the commander of each military district, the counterpart in the larger provinces to the governor.

Two significant changes have taken place in this system since the mid-1960s: first, a considerable strengthening of its role and an increase in its effectiveness qua administrative control, and second, devolution of responsibility for many aspects of development program performance to its lower reaches--*kabupaten*, *kecamatan*, and *kelurahan*.

TABLE 7 Administrative Levels, c. 1980: Indonesia

	Indonesia		Java	
Unit	Number	Average Number	Number	Average Number
Province	27	5,500,000	5	18,000,000
Second-Level Region[a]				
Kabupaten	246	500,000	82	950,000
Kotamadya	49	300,000	19	400,000
Kecamatan[b]	3,144	40,000	1,445	60,000
Kelurahan (Desa)[c]	54,000	2,000	20,000	3,500

Note: Usual translations of names of administrative levels: kabupaten = regency; kotamadya = municipality; kecamatan = subdistrict; kelurahan = administrative village, village complex.

[a] Excluding divisions within Jakarta.
[b] Excluding kecamatans within municipalities.
[c] Approximate numbers, excluding desas within urban areas.

Source: Central Bureau of Statistics (1979a, 1981b).

The first of these changes can be seen as a series of responses to the political events of the mid-1960s. A thorough shake-up in the civil bureaucracy, especially in provinces such as East Java and Bali where the Communist Party had been strongest, led to a greatly increased proportion of military men, both active and retired, in provincial and local government positions. In 1971, for example, all but seven of Indonesia's 26 governors and more than half of bupatis were reported to be military officers (Ward, 1974:2). The security concerns of the military hierarchy at all levels were intensified--toughening the civil bureaucracy, as Emmerson (1978:83) puts it, "with an exoskeleton of military command." Both civil and military administrations were enlisted in support of a new state party designed to establish a broad political base for the New Order government. The activities of other political parties were sharply curtailed; below the kabupaten level they were forbidden altogether except during election campaigns. The combined result was an administrative system much more able than before to translate government policy into action.

The second change, increasing local program responsibility, has been made feasible by this enhanced efficacy and necessary by the mounting demands of the development effort. Indonesia has traditionally had a large array of line-ministry programs extending down to the _kelurahan_, each attempting to work independently. Sinaga et al. (1976) identified no less than 60 institutions, under 12 separate government departments, that in theory operated down to this level. While no single _kelurahan_ has all or close to all of these institutions in operation, the scope for confusion and the work overload on local officials are evident. When the policy process no longer stops (as it used to) at the stage of planning and target setting but is concerned too with resulting performance, there is little alternative to devolution of program authority and local program coordination. Increased power of the administrative hierarchy at the expense of functional departments, with strenghthened roles for _bupati_ and _camat_ in particular, was thus to be expected. The programs that are the main success stories of the New Order government are those that have been able to work through or count on the active support of this hierarchy: the rice intensification scheme (BIMAS); the Kabupaten Development Program (INPRES--a public works/employment creation scheme financed by per capita grants to _kabupatens_; see Patten et al., 1980); and, as recounted in detail later in this study, the family planning program.

At the _kelurahan_ level there has apparently been a diminution of consensual village politics, as the _lurah_ and other village officials have taken on more administrative (and shed representational) functions. The _lurah_ has always had high status vis-a-vis his constituents (and in Java usually is one of the largest landholders by virtue of the village-owned land that is put at his disposal in lieu of salary); since the 1970s he has tended in addition to become (de facto and in self-identification) a full-time government official, as the flow of development programs, instructions, and paperwork demands from higher levels of government has grown (see, for example, Sajogyo, 1973:65-66). The position of head of the _pedukuhan_ or its equivalent (who is elected annually) seems to have weakened, becoming more that of administrative assistant to the _lurah_.

Despite rhetoric to the contrary, this trend towards cooptation of local community leaders into the national administrative system, with its characteristics of "top-down authority and one-way communication" (Emmerson, 1978:129), has moved Indonesia away from concepts of village autonomy and self-reliant development made familiar from the experience of rural development in, say, Meiji Japan or contemporary Taiwan. Local leaders have been conditioned to look to outside, mainly government, assistance to stimulate "development"--in the form of funds, organization, and ideas.

Sociocultural Change

Systematic information on virtually any aspect of sociocultural change in Indonesia is lacking. For example, time series charting shifts in attitudes related to demographic behavior, available in profusion in many other countries, are scant. All we can do here is note the more tangible factors that appear to be influencing people's values and outlook on such matters, leaving to later an exploration of the likely direction of their influence (Chapter 4). Three factors stand out: the rising educational level of the adult population as a result of the expansion of the school system since the 1940s; the steady reduction of child mortality and hence, presumably, changing expectations about child survival; and increases in economic activity, in the spread of consumer goods, and in contact with urban consumption values since the late 1960s.

Literacy among the population 10 years of age and older was 47 percent in 1961, 60 percent in 1971, and 72 percent in 1980. Among the age group 15-24 years, the figure has risen over these two decades from 63 percent to 86 percent (Central Bureau of Statistics, 1963, 1972, 1982a). A recent comparison with other Asian developing countries is shown in Table 8: Indonesian literacy is now far above that of South Asia and not much behind that of the leaders. Table 9 gives a more precise picture of the growth of education over the last four decades based on current (1980) educational levels in the population. Although differential survivorship by education may exaggerate the actual proportions educated among the earlier cohorts, the general trend is clear: primary schooling expanded in the 1940s and 1950s, then plateaued through the 1960s--doing little more than keeping pace with the (admittedly rapid) growth of postwar birth cohorts; only well into the 1970s did significant expansion resume. This table shows too the nature of the sex imbalance: distinct, but at the primary level fairly small and declining. (1980 census data record equal school enrollment rates for each sex in the age group

TABLE 8 Indicators of Social Development, c. 1979: Indonesia and Selected Other Asian Countries

Country	Adult Literacy Rate (percent) c. 1977	Enrollment Rates[a] c. 1979 (percent)		Life Expectancy (years) 1980	Population per Physician (thousands) c. 1977
		Secondary School	Primary School Females		
Indonesia	62	22	89	53	14
China	66	79	114	64	1
India	36	27	63	52	4
Malaysia	60	52	92	64	8
Pakistan	24	16	31	50	4
Philippines	75	63	107	64	3
South Korea	93	76	111	65	2
Taiwan	82	76	100	72	2
Thailand	84	29	78	63	8

[a] Enrollment as fraction of relevant population age group.

Source: World Bank (1980, 1981, 1982b).

TABLE 9 Educational Attainment by Birth Cohort and Sex, 1980: Indonesia

	Percentage of Surviving Cohort Members Who Have Completed					
	Primary School		Junior High School		Senior High School	
Year of Birth	Male	Female	Male	Female	Male	Female
1925-30	35	29	11	8	5	3
1930-35	37	30	14	9	8	4
1935-40	49	38	22	13	12	6
1940-45	55	44	22	14	12	7
1945-50	60	49	26	16	16	9
1950-55	61	50	26	18	15	10
1955-60	63	52	29	19	16	10
1960-65	64	57	u	u	u	u

Note: u = not yet available.

Source: 1980 census (Central Bureau of Statistics, 1982a:Table 6).

7-12--both 84 percent [Central Bureau of Statistics, 1982c:14]; see also the comparative female school enrollment data in Table 8.)

The child mortality drop was mentioned earlier (see Table 3) and later used as a sign of improving welfare. Translating it into survivorship terms, in the 1960s one child in four on average died before reaching age 15; in the 1970s, the figure was one in six. While there is still far to go before a child's death will represent a rare tragedy in the average family's life, the improvement to date can already be expected to have modified subjective estimates of mortality risks. (The risks for those of higher income or educational status were already fairly low in the 1960s; see McDonald, 1980.)

Economic changes and the accompanying rise in geographic mobility, together with the post-1965 depoliticization of village life, have also been noted above. Modern consumer durables are increasingly found in rural as well as urban households: for example, according to the 1980 census, radios were owned by 57 percent of urban and 36 percent of rural households, televisions by 29 percent and 4 percent, respectively. (The latter figures are not much below the limits set by electrification: as of 1980, 47 percent of urban households had electric lighting, but only 6 percent of rural households [Central Bureau of Statistics, 1982a:Tables 56, 58].) Shops in remote villages now stock cosmetics alongside their comestibles and patent medicines (see Singarimbun, 1978). Consumerist values seem to be blossoming, and not just within an economic elite.

However, some observers also see increasing anomie among the poor. In one far from scientific sampling of villagers' views of the future, the most characteristic descriptive word used was pahit (bitter).

CONCLUSION

The overall image of Indonesian development over the last 15 years is thus multifaceted. The impressive aggregate income growth was spread over most sectors of the economy and, at least by the late 1970s, had begun to benefit most of the poor as well as the better off. The employment picture is somewhat murky, especially in the large rural nonagricultural sector in Java and in the urban informal sector in the country as a whole. Employment seems, however, to have roughly kept pace with population growth, despite such structural changes as the displacement of female labor in agriculture by mechanization. Tight administrative control of the rural population has been exercised to maintain political calm--a condition in sharp contrast to the superheated political atmosphere prior to 1965. The same administrative structure has been wielded with substantial if selective success in promoting development programs. The fraction of the population with at least primary education has continued to grow, both from simple turnover and from further expansion of the school system. Three-fifths of the cohort born in 1960-65 completed primary school. Improvements in transport and greater media penetration of rural areas seem to be eroding rural-urban differences in values and consumption patterns.

As a summary and for later reference, some data on changing cohort demographic characteristics and experience in Indonesia for selected birth cohorts since the 1930s are assembled in Table 10. The rapid expansion in the numbers entering labor force ages in the 1960s--an increase of some 20 percent over that decade and a further increase of 35 percent in the 1970s--is especially notable. (This phenomenon, with its potential for inducing economic and political change, was pointed out by Keyfitz and Widjojo, 1964.)

TABLE 10 Selected Population Characteristics and Experience by Birth Cohort: Indonesia

Item	Year of Birth 1930-35	1940-45	1950-55	1960-65
Age in 1980 (years)	45-50	35-40	25-30	15-20
Average annual cohort size at birth (millions)	2.9	3.3	3.5	4.3
Proportion surviving to age 5 years (percent)	65	62	70	75
Average annual cohort size at age 15 (millions)	1.7	1.9	2.3	3.1
Proportion completing primary school (percent):				
males	37	55	61	64
females	30	44	50	57
both sexes	35	50	56	61
Average number children ever born per woman at age:				
25-30	u	2.90	2.54	u
35-40	4.84	4.94	u	u

Note: u = unavailable or not yet known.

Sources: Ratios of cohort sizes at age 5 from Feeney's age-ratios for 1971 and 1976 (Feeney, 1979a:Table 5); births from these ratios and West model life tables at levels assumed by Speare (n.d.), keyed to 1961 census population and 1961-70 vital rates (Table 2). Educational attainment from 1980 census (Central Bureau of Statistics, 1982a:Table 6). Children ever born from Table 5, adjusted for proportions ever married.

Given this background on the social and economic conditions within which Indonesia's demographic change has been taking place, the discussion now turns to a detailed examination of recent Indonesian fertility patterns and their immediate determinants.

CHAPTER 3

PROXIMATE DEMOGRAPHY OF INDONESIAN FERTILITY

Any summary measure of the overall fertility level in a population, such as the average number of children born to women by the end of their reproductive years or the crude birth rate, necessarily collapses a complex series of social and biological events occurring to individual women and the distribution of these events among women into a single index. For explanatory purposes at any level below a broad view of societal change over generations, the resulting information loss is critical. Conclusions on fertility determination may be reached that would be immediately falsified were the fertility process, mean and variance, laid out in detail. Having such detail, of course, does not ensure sound conclusions, but it does permit a much more precise linking of fertility to its socioeconomic and cultural setting.

This information loss may, however, be virtual rather than real. Instead of simply having to forage for the additional data among discarded materials, the more typical problem is that of gathering these data in the first place. In the Indonesian case, where simple estimates of total fertility are so often in dispute, knowledge of the constituent factors is particularly sketchy. This chapter first presents the estimates of total fertility and then assembles the available information on the major social and biological factors that directly govern fertility outcomes--marital patterns, practice of breastfeeding and postpartum abstinence, contraceptive use, and so on--what are now usually termed the proximate determinants of fertility. Finally, these two sets of information are combined using the simple but powerful accounting framework for proximate determinants developed by Bongaarts. This framework permits checks for consistency where information is relatively complete and inferences on missing estimates where it is less so.

The main statistical sources used are the 1971 census, the 1973 Fertility-Mortality Survey, the 1976 Intercensal Population Survey (SUPAS--the third round of which, known as the Indonesia Fertility Survey or SUPAS III, covered Java and Bali using the core questionnaire of the World Fertility Survey), the 1979 National Socioeconomic Survey (SUSENAS), and, to the extent its findings were available at the time of writing, the 1980 census. It might be thought that valuable supplementary quantitative information on fertility and its proximate determinants could be garnered from the various intensive village studies that have been conducted in Java in the 1970s--notably those of Sriharjo, Maguwoharjo, Ngaglik, and Serpong (see Appendix). However, problems of incompleteness and lack of comparability of data turn out to be considerable, and it has seemed preferable to use such studies instead mainly to provide a qualitative picture of local-level demographic behavior.

TOTAL FERTILITY

The overall picture of total fertility in Indonesia was summarized in Chapter 1. Table 11 expands this information, giving estimates from the main statistical sources named above, computed by the Cho-Grabill "own-children" method and the maternity history method for various time intervals. In all cases, single-year fertility estimates show somewhat erratic year-to-year variation and hence are averaged over several years in this and later tables.

In general, the present study relies on "own-children" estimates rather than those based on maternity histories. The former have been computed from all but one of the large enumerations in Indonesia from 1971 on, and the overlapping estimates from independent sources have shown good agreement. In contrast, the fertility time trends based on maternity histories are available from only two sources (the 1973 Fertility-Mortality Survey and the 1976 Indonesia Fertility Survey, SUPAS III), only the first of which gives nearly complete national coverage. Moreover, the overlapping estimates show some inconsistencies. McDonald et al. (1976:23) concluded their careful analysis of the Fertility-Mortality Survey fertility trend findings with the following cautious statement:

> The measured fertility decline in 1971-72 remains somewhat of a mystery. The explanation would

TABLE 11 Estimates of Total Fertility by Region, 1967-79: Indonesia

	Own-Children Method				Maternity History Method	
Region	1967-70	1971-75	1974-78	1976-79	1965-70	1970-74
Java	5.2	4.8	4.2	u	5.5	4.8
Jakarta	5.1	4.6	4.4	u	u	u
West Java	5.9	5.6	5.1	u	6.7	6.1
Central Java	5.3	4.8	4.3	u	5.5	5.1
Yogyakarta	4.7	4.2	3.6	u		u
East Java	4.7	4.2	3.4	u	5.1	4.3
Sumatra	6.4	6.0	5.1	u	7.2	u
Kalimantan	5.8	5.5	4.9	u	u	u
Sulawesi	5.9	5.8	5.0	u	6.7	u
Other Islands	6.2	u	6.0	u	u	u
Indonesia	5.5	5.1	4.5[a]	4.7	5.9	u

Note: u = unavailable or not yet available.

[a] Total fertility computed as a weighted average of the regional estimates is 4.6.

Sources: Own-children estimates: 1967-70, 1971 census (Central Bureau of Statistics, 1976); 1971-75, average of SUPAS I and II (Indonesia Panel, 1982); 1974-78, SUSENAS 1979 (Central Bureau of Statistics, 1981a); 1976-79, 1980 census (Central Bureau of Statistics, 1982b). Maternity history estimates: 1965-70, Fertility-Mortality Survey (McDonald et al., 1976:Table 3.10); 1970-74, SUPAS III (Indonesia Fertility Survey, 1978:Table 6.11).

> appear to be a compound of age misstatement, underregistration of births of young children and, in the case of Bali, East Java and urban areas of Sumatra and Sulawesi at least, some actual decline in fertility. The last factor can account for only a small part of the measured decline; the main explanation would appear to lie in an age misstatement and underregistration.

Indeed, the fertility estimates for 1971-72 for Java and Bali from the Indonesia Fertility Survey showed no radical drop, but rather a continuation of the moderate decline begun several years earlier. The authors of the Principal Report of this survey (Indonesia Fertility Survey, 1978:59), however, then introduced a very optimistic interpretation of the analogous drop found from their maternity history estimates for the years immediately before 1976:

> The Total Fertility Rate for Java and Bali has remained constant at around 5.5 throughout the 1960s. At the end of the decade a slow decline started and by 1972, the TFR had come down to around 5.0. After this the decline in fertility appears to have accelerated greatly and by 1974-75 the TFR was apparently approaching 4.0.

Belying this interpretation is an analysis of the same material by Feeney and Suharto (1980:4), which concludes that any fertility decline in Java and Bali in the decade prior to the 1976 survey "is small compared to the errors in the maternity history data and the decline is greatly exaggerated if the data are accepted at face value." Subsequent estimates of fertility from the 1979 National Socioeconomic Survey and the 1980 census reinforce these doubts about the Indonesia Fertility Survey's maternity histories.

Relying, then, on the series of "own-children" estimates, Indonesian total fertility in the late 1970s can with some assurance be put at around 4.7. A lower figure (about 4.3) is not impossible but the evidence for it--taking at face value the 1980 census-based "own children" fertility estimates for the period 1978-79--is weak. (See also the later discussion of consistency among the proximate fertility determinants.) The decline over the decade since the late 1960s was probably some 15 percent for the country as a whole and near 20 percent for Java

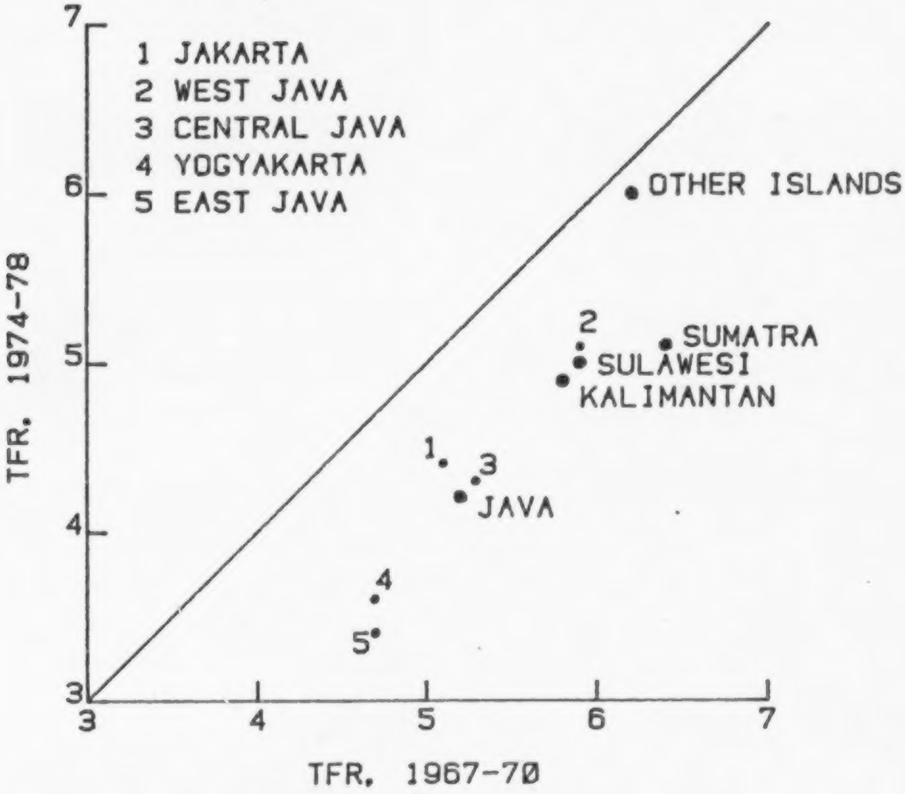

FIGURE 3 Total Fertility Rates by Region, 1967-70 and 1974-78: Indonesia

and Sumatra. In East Java, the fall appears to have exceeded one quarter; moreover, an independent fertility estimate from the first round (1980) of the East Java Population Survey (Sullivan, 1982) puts the 1979 total fertility rate for the province at 3.2, continuing the trend. Figure 3 charts the decline by major regions.

Urban and rural areas have participated about evenly in the decline, although in Java and Sumatra the urban-rural fertility gap (total fertility around 0.5 lower in urban than in rural areas) has slightly narrowed over the period. The age pattern of the decline can be read from Table 12. In the first few years of change, the fall was concentrated outside the prime child-bearing ages (20-34 years); in the mid to late 1970s a strong fertility decline persisted at ages above 35, and rates for women in the range 25-34 also dropped substantially. The

TABLE 12 Average Age-Specific Fertility Rates and Percentage Declines, 1967-79: Indonesia

	Fertility Rates (per 1,000)			Percent Decline	
Age Group	1967-70	1971-75	1976-79	1967-70 to 1971-75	1971-75 to 1976-79
15-19	138	121	114	12	6
20-24	266	256	248	5	7
25-29	269	251	229		
30-34	209	198	177		
35-39	142	119	103	15	17
40-44	64	59	46		
45-49	24	18	14		
TFR	5.56	5.11	4.66[a]	8	9

[a] The Indonesia Panel's tentative estimate, based on reverse survival from the 1980 census, is 4.91 (for 1976-78; the 1979 figure was discarded because of indications of age errors and omissions of young children in the census).

Sources: 1967-70 and 1971-75, average of SUPAS I and II (Indonesia Panel, 1982); 1976-79, 1980 census (Central Bureau of Statistics, 1982b:Table 2).

contribution to the overall fertility drop by women at ages 15-19 was 13 percent, at ages 20-34, 50 percent, and at ages 35-49, 37 percent.

Socioeconomic differentials in Indonesia's total fertility are distinctive: the highest fertility levels are found in the broad middle range of the status hierarchy (as measured, for example, by education of husband or wife). In the 1960s, for example, female elementary school graduates were estimated to have total fertility of 6.0 on average, compared to 5.1 for those who had not completed elementary school and 5.5 for high school graduates (Cho et al., 1980:51). Only for the tiny fraction of the population with tertiary education was fertility estimated to be lower than for those with no schooling. These differentials have been analyzed in detail by Hull and Hull (1977). The 1976 data on average parity of women by educational attainment and age group (Table 13) give a more recent picture confirming this pattern; it is also maintained under the substantially

TABLE 13 Average Number of Children Ever Born to Ever-Married Women by Age Group and Educational Attainment, 1976: Indonesia

Educational Attainment of Mother	Age-Group of Mother (years)			
	25-29	30-34	35-39	40-44
No school	2.8	4.0	4.9	5.1
Incomplete primary school	3.0	4.3	5.5	5.8
Primary school	3.0	4.5	5.3	6.1
Junior high school	3.0	4.0	5.3	5.7
Senior high school	2.2	3.6	4.7	5.2
Any tertiary schooling	1.7	2.4	3.3	3.8
All levels	2.9	4.2	5.1	5.3

Source: SUPAS II (Central Bureau of Statistics, 1978a:Table 5).

lower fertility now prevailing in East Java (Sullivan, 1982). Fertility decline within mothers' educational categories will be clearer when the 1980 census is more fully analyzed. Comparing the 1971 census and 1976 SUPAS II average parity data, the small 1971-76 declines noted earlier within the age groups 25-29 and 30-34 (Table 5) are entirely accounted for by women with no schooling or incomplete elementary school. The increase in average educational levels in the population has probably shifted as many women into as out of the educational categories that are associated (cross-sectionally) with higher fertility.

MARITAL PATTERNS AND MARITAL FERTILITY

A simple first step in identifying proximate fertility determinants is to separate out the effects of marital patterns and of fertility within marriage. In a working paper prepared for the Indonesia Panel of the NAS Committee on Population and Demography, McDonald (1979) assembled and evaluated the main sources of statistical information on Indonesian marital patterns prior to the 1980 census. The various survey estimates of marital status by age show many inconsistencies and erratic time trends; McDonald accords somewhat higher credence to the larger enumerations. The estimates from several of these are shown in Table 14. The time trend indicated is consistent with moderately increasing female age at first

TABLE 14 Percent Never Married for Females Aged 15-19 and Males Aged 20-24, by Region, Selected Years 1961-80: Indonesia

	Females Aged 15-19			Males Aged 20-24		
Region	1961	1971	1979	1961	1971	1979
Java	u	56	64	u	56	55
Jakarta	56	69	79	59	71	73
West Java	u	47	52	u	43	38
Central Java	u	60	68	u	57	60
Yogyakarta	75	85	88	69	78	77
East Java	44	55	64	62	60	58
Sumatra	u	70	81	u	62	65
Kalimantan	u	71	79	u	63	58
Sulawesi	u	76	83	u	60	60
Bali	u	81	85	u	59	60
Other Islands	u	74	92	u	59	77
Indonesia	u	62	71	u	58	59

Note: u = unavailable.
Sources: 1961, 1971 censuses; 1979 SUSENAS. 1961 data computed from available census tables (see Appendix); other estimates cited from McDonald (1979:Table 1) and Central Bureau of Statistics (1981a:Table 2).

marriage and approximate constancy in male age. Regionally, the female increase seems most pronounced in Java, Sumatra, and the eastern provinces (Other Islands), with Kalimantan joining the trend late in the 1970s.

SUPAS II and III contain specific information on age at marriage from direct questions on the subject, although responses in both cases need to be treated with caution because of possible dating errors. Median age at marriage estimates from the former source for women of three successive birth cohorts are presented in Table 15. The overall increase between women in their early 20s in 1976 and women in their 30s and 40s is little more than a year. The regional variation is broadly consistent with the marital status data in Table 14. The median age for urban areas (not shown, but given in McDonald, 1979) is some two years higher than that for rural areas, a gap that has been widening. The Indonesia Fertility Survey (1978:Table 4.1) also reported on median age at marriage, but for Java and Bali only. Its estimates, slightly lower than those in Table 15, locate the increase somewhat more precisely--beginning with the birth cohorts of the mid to late 1940s.

There are significant changes in marriage patterns that are not captured by the median data. One is a strong decline in female marriage at very young ages. The Indonesia Fertility Survey (1978:Table 4.1) records this for Java and Bali in 1976: up to the 1936-40 birth cohort, some 40 percent of women were married by age 15; for the 1951-55 cohort this fraction had droped to 24 percent, and for 1956-60, to 14 percent. The corresponding data for all of Indonesia (from SUPAS II; see Central

TABLE 15 Median Female Age at Marriage by Birth Cohort and Region, 1976: Indonesia

	Birth Cohort		
Region	1931-45	1946-50	1951-55
Java	16.5	16.9	17.8
Jakarta	17.7	19.4	19.6
West Java	16.0	16.3	17.2
Central Java	16.6	17.1	17.7
Yogyakarta	18.9	20.2	>20.5
East Java	16.5	16.9	17.8
Sumatra	18.1	18.5	18.7
Kalimantan	18.1	18.5	18.7
Sulawesi	18.5	19.0	20.4
Bali	20.7	20.4	20.3
Other Islands[a]	19.3	19.3	20.0
Indonesia	17.0	17.4	18.3

[a] See Appendix for limitations of survey coverage.

Source: McDonald (1979), computed from SUPAS II.

Bureau of Statistics, 1978a:Table 10) show a parallel decline, from around 20 percent for birth cohorts prior to 1940 to 8 percent for 1956-60. The drop reflects a shift away from parentally arranged marriages--often occurring several years before actual cohabitation. The first legal limitation on age at marriage dates only from the 1974 Marriage Act, which set minimum ages of 16 years for women and 19 years for men (Subadio, 1981:21).

The presence of a substantial and changing time delay between marriage and cohabitation makes marriage somewhat less proximate as a fertility determinant. Age at cohabitation is the more relevant index, and the time trend in this age is likely to track the time trend in age at first birth rather than in age at marriage. Age at first birth, at least in Java and Bali, remained virtually constant up to the 1951-55 birth cohort. The Indonesia Fertility Survey estimates by birth cohort are given by Pebley et al. (1982):

	1926-30	1931-35	1936-40	1941-45	1946-50	1951-55
Median	20.2	19.5	19.1	18.8	19.4	19.8
Mean	20.7	20.1	19.6	19.8	20.5	22.8

Related to the upward trend in female age at marriage has been a fall in the rate of divorce. Procedurally easy (especially for the husband) and in many communities not stigmatized, divorce is very common in Indonesia. The 1973 Fertility-Mortality Survey found that in Java, 24 percent of women were divorced within 5 years of marriage, 30 percent within 10 years; outside Java, the corresponding figures were 13 and 20 percent. Most divorces occurred early in marriage: the median length of first marriage for marriages that ended in divorce was around 2 years (see Soeradji, 1979:148-150). Very likely, a large proportion of these divorces were of early, arranged marriages.

The fall in the divorce rate is documented for Java, the region where it was highest. The 1973 Fertility-Mortality Survey for West Java, for example, shows about a one-third drop between prewar and postwar marriage cohorts in the fractions divorced at the same durations after first marriage (1, 2, and 5 years) (McDonald and Abdurahman, 1974). Outside Java the trends are less evident, although probably in the same direction. (Anecdotal evidence of an opposite trend in some regions of Sumatra is contained in Ihromi et al., 1973.)

Effects of marital instability on fertility, of course, depend on the degree and pace of remarriage. Both are high in Indonesia. The Indonesia Fertility Survey (1978:Table 4.5) found that, on average, women in Java and Bali spent 90 percent of their time since first marriage in the married state, a fraction that was fairly uniform across age groups and marriage cohorts; women with completed primary or high school education spent even higher proportions of time married--about 95 percent. (Somewhat higher proportions of reproductive time lost through divorce were observed in the Sriharjo study in Yogyakarta [see Chapon, 1976].) To the extent that infertility is a reason for divorce, the reassortment of partners may have a positive effect on fertility, compensating for some of the time lost.

Regional differences in age at marriage and proportions married in Indonesia do not conform to corresponding regional fertility differentials. The generally later

TABLE 16 Coale Indices of Marital Fertility (I_g) and Proportions Married (I_m) by Region, 1961-70 and 1971-80: Indonesia

	I_g		I_m	
Region	1961-70	1971-80	1961-70	1971-80
Java	.51	.44	.87	.82
Sumatra	.68	.57	.81	.77
Kalimantan	.61	.53	.81	.79
Sulawesi	.65	.59	.76	.73
Other Islands	.67	.65	.76	.74
Indonesia	.56	.49	.84	.80

Sources: 1961-70, Cho et al. (1980:Table 13); 1971-80, computed from 1979 SUSENAS and 1980 census data (Central Bureau of Statistics, 1981a, 1982a, 1982b).

female age at marriage found outside Java, for example, coincides with higher fertility in those regions. The Java-Other Islands gap in total fertility thus disguises a larger gap in fertility within marriage. In part, of course, this situation may simply reflect variation in the time delay between marriage and cohabitation mentioned earlier; regional differences in age at first birth might show less dissociation between late marriage and low fertility. However, the more important factors are probably real differences among regions in involuntary childlessness and in birthspacing intervals.

Regional differences can be conveniently summarized in terms of Coale indices, which decompose an overall index of fertility into multiplicative indices of proportions married (I_m) and marital fertility (I_g). (The indices are scaled from 0 to 1, with the upper limit corresponding to universal marriage throughout the reproductive years and marital fertility at the highest reliably documented rates--from the Hutterite communities of North America.) Table 16 presents these indices for the major regions of Indonesia in the 1960s and 1970s; the same information is charted in Figure 4, together with overall fertility (I_f, where $I_f = I_m \times I_g$) isoquants.

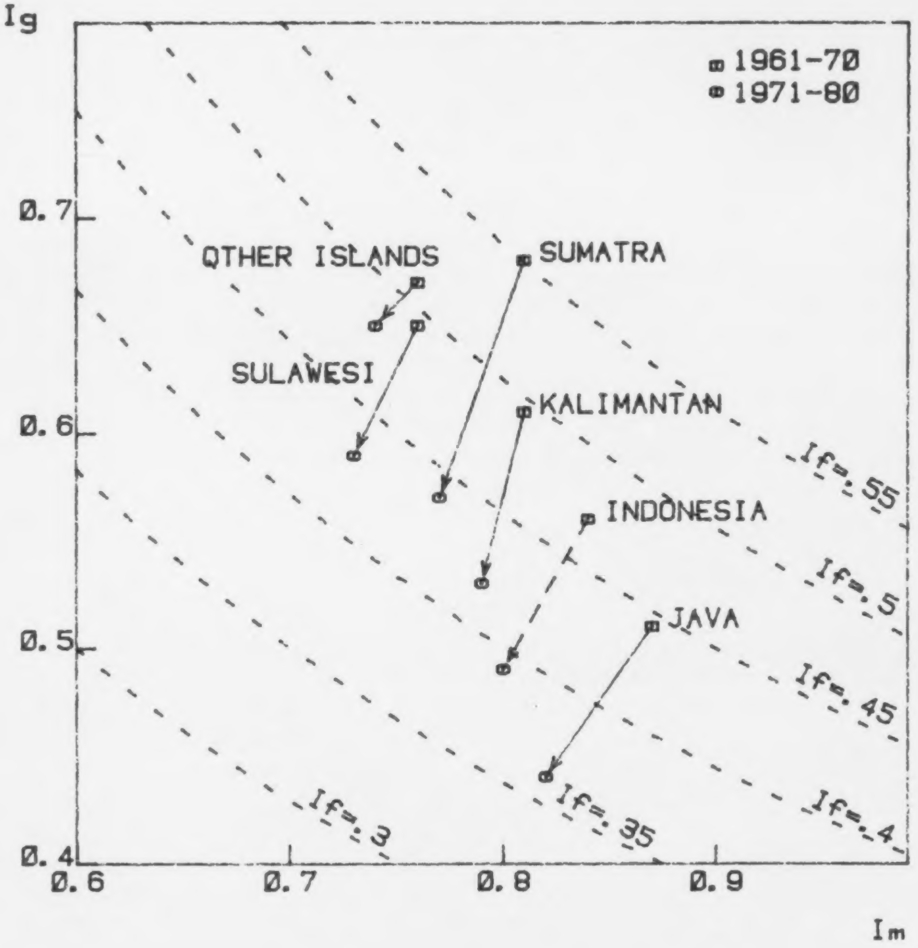

FIGURE 4 Coale Indices of Proportions Married (I_m) and Marital Fertility (I_g) for Major Regions, 1960s and 1970s: Indonesia

The regional patterns of demographic behavior seen in Figure 3 reflect both recent changes in social and economic conditions (discussed in Chapter 4) and differences in fertility and marital patterns existing prior to the onset of fertility decline. One source of these pretransition differences is to be found in ethnolinguistic divisions. The nine largest ethnic groups in Indonesia, together making up some four-fifths of the population, were noted in Chapter 2. The regional bases of these groups have been somewhat blurred by migration and urbanization; however, except for the Chinese, "core areas" can still be identified--in some cases whole provinces. For Java and Madura, rough ethnic divisions can be drawn in rural areas at the kabupaten level. (Language data for small regions from the 1980 census will allow a fairly precise ethnic mapping; the same data at the household level will permit a systematic quantitative analysis of ethnic influences on fertility patterns to be undertaken. Pending these results, the conclusions drawn here must be regarded as tentative.) Fertility data that can be used to identify broad characteristics of the major groups have been computed from the 1971 census for the decade 1961-70 (see Central Bureau of Statistics, 1976). Of the eight major groups (excluding the Chinese), the Madurese show levels of marital fertility and proportions married fairly similar to those of the Javanese; the Minangkabau, Buginese, and Balinese resemble each other in these respects; and, with thinner evidence, the Batak and Coastal Malays are alike. Hence we are left with four patterns, qualitatively described in Table 17. The terms high, medium, and low in this table are used relatively: in many societies, for example, "low" proportions married would be an inapt characterization of a Coale index I_m value in the range 0.75-0.79; in Indonesia, however, the overall I_m value in the 1960s was 0.84, and only two provinces (Maluku and North Sulawesi) had I_m levels below 0.7 (Cho et al., 1980:42, 44). Regional and local-area fertility estimates do not throw any light on Chinese fertility in Indonesia. However, one demographic study of the Chinese in East Java (Pardoko and Indroes, 1974) indicated low levels of both overall and marital fertility in comparison to the East Java averages.

BREASTFEEDING AND POSTPARTUM ABSTINENCE

The potentially profound effect of breastfeeding on fertility is now widely recognized. The physiological link, through suppression of ovulation, is combined in many societies with a social link, through practice of sexual abstinence during lactation. In many cases both breastfeeding and abstinence are governed largely by cultural traditions and beliefs (not necessarily tied to fertility at all) and their associated normative pressures; they may also, however, be instruments of voluntary regulation of fertility by the woman or couple.

TABLE 17 Pre-Transition Fertility Characteristics of the Major Ethno-Linguistic Groups: Indonesia

Ethno-Linguistic Group	Approx. Percent of Population	Marital Fertility	Proportions Married	Total Fertility
Javanese	50	Very Low	High	Low
Madurese				
Sundanese	15	Medium	High	High
Buginese	6-8	Medium	Low	Medium
Minangkabau				
Balinese				
Batak	10	High	Medium	High
Coastal Malays				

Note: For marital fertility, I_g = .40-.49 (very low), .55-.64 (medium), $>$.65 (high); for proportions married, I_m = .75-.79 (low), .80-.84 (medium), $>$.85 (high); for total fertility, TFR = 4.5-5.4 (low), 5.5-6.0 (medium), $>$6.1 (high).

Sources: Provincial and kabupaten fertility data for 1961-70 from Cho et al. (1980:Appendix Table 8) and Central Bureau of Statistics (1976:Tables 1.1 and 2.1).

Hence an intricate mixture of "tradition-bound" and purposive behavior may lie behind the observed patterns, and in the latter case with the intent either of safeguarding the health of the child and mother or limiting completed fertility. To the extent that breastfeeding is deliberately used for fertility regulation, the standard and convenient definition of natural fertility--that which is not subject to parity-specific control--loses much of its intuitive meaning.

Despite its importance, information on breastfeeding in Indonesia is extremely sketchy. The main sources are the Indonesia Fertility Survey (SUPAS III) and a clutch of micro-level studies concentrated in Yogyakarta (and hardly any outside Java).

The Indonesia Fertility Survey (1978:Table 5.13) estimates for Java and Bali give a mean duration of breastfeeding of 19 months, with 20 percent of women reporting less than 12 months (including only 3 percent not breastfeeding at all) and 21 percent longer than 24 months. A third of the responses were heaped at 12 and 24 months. The median duration was 22 months, which compares, for example, to 31 months in Bangladesh, 19 months in Pakistan and Thailand, 13 months in the Philippines, and 3 months in Malaysia (World Fertility Survey data cited by McCann et al. 1981). On the limited evidence of relative constancy of breastfeeding patterns in Java and Bali across age and parity classes, the Indonesia Fertility Survey Principal Report argued that there was no very distinct declining trend in breastfeeding practice in the years prior to 1976. This would contrast with the noticeable declines found, for example, in Thailand and Malaysia. However, Indonesia may not in fact be an exception to this familiar trend. The educational differential in breastfeeding--women with completed primary education have mean durations two months shorter than those with less schooling (Indonesia Fertility Survey, 1978:Table 5.14)--would tend to support a decline as primary education spreads. More directly, a shortening of the duration of postpartum abstinence, for which there is evidence (see below), would tend also, if it is not offset by contraception, to shorten breastfeeding by interrupting it with the next pregnancy.

Regional variation shows a mean duration of breastfeeding shorter by 1-2 months in West Java than in other provinces of Java and Bali (aside from Jakarta). In Jakarta and in urban areas generally, breastfeeding was considerably shorter (12-13 months) than the average for Java, and some 6-8 percent of women did not breastfeed. Outside Java and Bali there is no representative source of information on breastfeeding; it is reasonable to speculate, however, that on average the patterns there are closer to those of West Java than to those of the rest of Java and Bali.

On the subject of postpartum abstinence, survey data are not helpful. Recorded prevalence rates for abstinence as a contraceptive method can be given little credence (see below), and there is no survey information on durations. For the latter, we must rely on intensive village studies. Since most of these studies have been located in the areas of Java (notably near Yogyakarta) where abstinence seems to be particularly significant, there is little basis on which to make country-wide generalizations.

Some notes on the findings of selected micro-level studies in the areas\ of breastfeeding and postpartum abstinence are presented below.

- Maguwoharjo, a kelurahan 10 km east of Yogyakarta, 1972-73 (see V. Hull, 1975): The mean duration of breastfeeding was 16 months (standard deviation, 6 months); of postpartum amenorrhea, 13 months; and of postpartum abstinence, 12 months. Seventy percent of women interviewed said their breastfeeding was for the health of the child only; 10 percent said it was for the purpose of spacing births; 14 percent said it was for both of these reasons. Both behavioral and attitudinal evidence points to a shortening of breastfeeding and abstinence periods (comparing younger and older cohorts). Following their first birth, women born in the 1930s breastfed an average of 15 months, women born in the 1950s, 12.5 months; for postpartum abstinence, the corresponding figures were 13 and 11 months. There was a similar strong age difference in proportions of women disapproving resumption of intercourse prior to weaning or to return of menstruation; for example, in the case of weaning, 79 percent of women born in the 1920s disapproved compared to 39 percent in the 1950s cohort. The gradient parallels and may be connected to a sharp drop in the belief that intercourse during lactation spoils the mother's milk: 40 percent of the 1950s cohort professed this belief, down from 85 percent for the 1920s cohort. Whatever the reason, the attitudinal shift presumably lessens the normative pressure for extended postpartum abstinence.

In addition to this apparent change over time, patterns of abstinence also vary systematically by socioeconomic status, whether measured by income or education. For example, mean duration of abstinence following the birth of a still-surviving child for two cohorts of women showed the following differences by income class (in months):

	Lower	Middle	Upper
1940s cohort	16	14	11
1930s cohort	19	16	13

- Sriharjo, a kelurahan 18 km from Yogyakarta, 1969-70 (Singarimbun and Manning, 1974): The mean duration of breastfeeding was 26 months (standard deviation 6 months) and of postpartum abstinence, 23 months (where infants survived). The reported period of amenorrhea was approximately equal to the period of breastfeeding for over half the women. For women whose infants were still living after two years, median durations of breastfeeding and abstinence by age group were as follows (in months):

	15-24	25-34	35-44	35-44
Breastfeeding	21.8	21.7	21.6	23.6
Abstinence	18.0	25.9	26.0	27.8

Both breastfeeding and postpartum abstinence durations were negatively associated with the wife's educational attainment. Mean durations in months were as follows:

Years of Schooling	Breastfeeding	Abstinence
0	26.3	24.3
1-3	22.3	21.8
4-6	21.7	19.3
7+	19.8	13.7

(The differences in part reflect time trends.) Similar but less pronounced gradations were found by economic status, but only slight differences by landownership. In all cases, the attitudinal data on ideal durations were consistent with the actually reported patterns.

- Ngaglik, a kecamatan 15 km north of Yogyakarta, 1976 (see V. Hull, 1978; Rens, 1980): A prospective study of breastfeeding determinants found the durations strongly negatively associated with mother's income and education, even when age was controlled. In turn controlling for socioeconomic status, the proportion of women who breastfed at least 24 months was 71 percent among those aged 30-39, 53 percent among those aged 20-29. The positive relationship with mother's age remained after controlling for parity and contraceptive practice, suggesting that it was a time trend rather than a life-cycle effect. (Durations less than 18 months, however, were related to contraceptive use rather than to age.) There was a divergence between declared and actual length of postpartum abstinence, the former apparently reflecting cultural traditions. The evidence suggested "that the cultural mechanism of sexual taboos might be more significant in determining birth intervals than the physiological factor of ovulation postponement due to lactation" (Rens, 1980:149). Motives for abstinence were about equally divided between lactation taboos and intentional birth spacing (V. Hull, 1978:Table 4).

- Cermee and Duduk Sampeyan, kecamatans in East Java 30-40 km west of Surabaya, 1961 (see Gille and Pardoko, 1966): Among respondents in 10 sampled villages, 64 percent reported breastfeeding for 24 months or longer; most of the rest reported 12-23 months. Illiterate women averaged longer breastfeeding than literate women. Virtually none of the respondents said they had heard of birth-spacing methods; interbirth intervals nonetheless averaged 38 months, and the average preferred birth interval was about the same.

- Serpong, a kecamatan in West Java 45 km southwest of Jakara, 1972-75 (see Zuidberg, 1978): Median length of breastfeeding was 18 months. There was a relatively short duration of postpartum abstinence of 4-6 months (Singarimbun and Manning, 1974:76) and no taboo against resumption of intercourse prior to weaning.

- Boyolayar and Kadilayu, kelurahans in Central Java, 1970 (see Yayasan Kristen, 1970-71): Median duration of breastfeeding was 18-24 months, with postpartum abstinence up to the end of weaning. Ideal spacing of children was three years, and a birth interval less than 18 months was considered to indicate a "shameful" lack of self-control. Abstinence was the chief method of birth control known (the study was undertaken prior to the start of the national family planning program) and was widely used for spacing, especially by the poor.

- Banyutowo and Karimunjawa, villages on the north coast of Central Java, 1975 (see Satoto, 1977): The mean length of breastfeeding was 24 months in both villages, with a standard deviation of about 4 months. There was an evident age gradient, possibly reflecting a time trend: women aged 20 years or below reported durations averaging 21 months, while women in their 30s reported 27 months. Similarly, illiterate women and those with less than primary school averaged 24 months, and women who had completed primary school, 21 months. There was almost no gradient by landholding. About one-fifth of the women gave the need to return to work as the reason for stopping breastfeeding; one-fourth stopped because of becoming pregnant again.

Based on these findings, the following general conclusions appear to be justified:

(1) Breastfeeding and associated postpartum abstinence are major determinants of overall fertility in Java and

possibly in the rest of Indonesia; they are probably also important in determining regional and socioeconomic fertility differentials. (Relative quantitative significance is discussed below.)

(2) There has been some decline in mean duration of breastfeeding, especially in the regions where durations were traditionally longest (Yogyakarta and Central and East Java); the scale of this decline is not known.

(3) Postpartum abstinence as a traditional child-spacing practice has been declining, in part with the rapidly expanding use of "modern" program-supplied contraceptive techniques and in part with the erosion of taboos (formerly strong in Yogyakarta and Central and East Java) against resumption of intercourse during breastfeeding. The extent of such decline would be clearly important for judging how much of the increase in contraceptive prevalence in the 1970s has been absorbed by substitution for traditional methods of birth spacing; unfortunately, this is not known.

(4) Duration of amenorrhea is largely a function of intensity of breastfeeding. Where, as in Indonesia, supplementary foods are introduced to infants early, a relatively simple relationship between lactation and infecundability cannot be taken for granted. In particular, it cannot be assumed that postpartum abstinence is redundant behavior in terms of its fertility effect where breastfeeding is practiced.

CONTRACEPTIVE USE

The most striking change in Indonesian demographic behavior over the post-1967 period is the dramatic increase in the use of modern methods of contraception. The programmatic organization that has ensured widespread availability of these methods and has encouraged their use through a broad range of conventional and innovative approaches is properly seen as a major accomplishment. This is examined in some detail in Chapter 4; for the present, our interest is in the bare statistical record of contraceptive prevalence.

The main data sources on the subject are various large-scale sample surveys conducted during the 1970s, the 1980 census (possibly the first anywhere to have had a question on current use of contraception), and the prevalence estimates constructed from service statistics and ad hoc surveys by the Family Planning Board.

In Indonesia as a whole in 1980, 27 percent of married women under 50 years of age reported they were currently using contraception, up from 18 percent in 1976 (see Table 18; a slightly higher proportion than the census figure was recorded in the 1979 National Socioeconomic Survey). The comparable figures for other countries in the region in the mid to late 1970s are as follows (World Fertility Survey data except where noted): Philippines (1978), 36 percent; Thailand (1975), 33 percent; Malaysia (1974), 33 percent; Taiwan (1977), 61 percent (Nortman and Hofstatter, 1980); and India (1977), 24 percent (Jain and Adlakha, 1982). In all these cases except India, more recent evidence shows further substantial increases in use rates in the late 1970s. Indonesia's trend in overall contraceptive use is similar to that of its Southeast Asian neighbors, but lagged by several years; its use rate now exceeds that of India and greatly exceeds that of Pakistan and Bangladesh.

As the earlier discussion of postpartum abstinence and breastfeeding may suggest, it is not altogether clear

TABLE 18 Percent of Married Women of Reproductive Age Reporting Current Use of Contraception, by Age, 1976, 1979, and 1980: Indonesia

Age Group	1976	1979	1980
15-19	7	16	10
20-24	17	28	23
25-29	24	41	34
30-34	24	40	36
35-39	22	36	32
40-44	15	25	24
45-49	9	16	16
All Ages	18	31	27

Sources: 1976 SUPAS II (Central Bureau of Statistics, 1978a:Table 18); 1979 SUSENAS (Central Bureau of Statistics, 1981a:Table 6); 1980 census (Central Bureau of Statistics, 1982a:Table 25).

whether respondents--and, for that matter, interviewers--would categorize traditional practices that have a known birth-spacing effect as "use of contraception." Presumably some would (and did, as the results classified by method show), while for others it is likely that the publicity given to program-supplied methods has caused those methods alone to be associated with contraception. When asked what methods of birth control they knew of, for example, married women of reproductive age interviewed in SUPAS II (1976) were most familiar with the pill (46 percent having heard of it) and to a lesser extent with the IUD and condom (25 percent and 20 percent); less than 2 percent professed knowledge of abstinence, 4 percent of the rhythm method, and 9 percent of any other "folk" method. No category of breastfeeding was used (Central Bureau of Statistics, 1978a:Tables 18, 23; see also the discussion of abstinence below). At the same time, however, there is anecdotal evidence (for example, the field studies by Ihromi et al., 1973) that suggests fairly wide awareness of traditional birth-spacing techniques throughout Indonesia. There is thus a substantial grey area in the interpretation of aggregate use rates, especially in measuring time trends.

Another caution should also be noted. Both the vigor with which the organized family planning program has been pursued in Indonesia and the emphasis it has put on achievement of targets in numbers of acceptors may have helped to create a climate in which survey responses on use rates are exaggerated. Especially with acceptance of oral contraceptives, but even with the IUD (the other main program method), recorded prevalence may not translate simply into couple-years of protection discounted by an appropriate failure rate. For the pill, failure rates computed from situations where user motivation is clearly strong overstate use-effectiveness in a less clear-cut situation. Evidence on these points is very sketchy. A precise knowledge of other proximate determinants and of fertility outcomes would of course settle the question, but this hardly exists in Indonesia. A crude test would be conformity with the international cross-sectional relationship between contraceptive use and fertility estimated by Nortman and Hofstatter (1980:94): using that relationship, an average use rate of 27 percent, the level found in the 1980 census, corresponds to a crude birth rate of 36 per 1,000, which may well be about the correct birth rate for Indonesia at the end of the 1970s. Detailed follow-up studies to investigate contraceptive use on a case-by-case basis also help to clarify the issue. A study of this sort, conducted by Sullivan et al. (1974) in Mojokerto kabupaten in East Java, found continuation and pregnancy rates within the typical range of international experience; subsequent studies by the Family Planning Board suggest higher than average continuation rates (see, for example, Teachman et al., 1980).

The survey data on contraceptive use of course provide only snapshots of a rapidly changing situation. However, examination of the numbers and characteristics of women reported as current users and of the method mix is still useful. Proportions of users (among married women of reproductive age) by age are shown in Table 18. The apparent increase in use in the late 1970s is striking, although the discrepancy between the 1979 and 1980 estimates--the former from the National Socioeconomic Survey, the latter from the census--suggests either some volatility in acceptance patterns or a certain shakiness in the data. (Where possible, the discussion here relies on the census results.) The age pattern is as expected; if it were adjusted for lower rates of exposure to risk of pregnancy at later ages, as can be done for Java and Bali in 1976 using the more detailed WFS schedule, it would very like parallel the WFS Java-Bali finding of relative constancy over age (above 25 years) in proportions of exposed women using contraception.

Contraceptive use rates are sharply higher among women who have secondary and tertiary schooling, but this has little quantitative significance because of the small numbers of women concerned. At the primary level and below, gradations in use are smaller but in the same direction (Table 19). For men the pattern is similar (Soeradji and Harijati, 1981:82). In contrast to this positive association of use rates with education, the association with economic status, at least in Java and Bali, is U-shaped. Moreover, the relationship is not an artifact of age or time differences: it appears to survive the more obvious statistical controls (Freedman et al., 1981). Interestingly, use rates in Java in the 1970s were higher in rural than in urban areas, although the gap narrowed later in the decade. (Outside Java, urban rates remained much higher than rural.) We return to these potentially significant differentials in Chapter 4.

Reported methods of birth control being used are given in Table 20. Just over half of women reporting any method specified the pill; sterilization is notable for its near

TABLE 19 Distribution of Women and Proportion Reporting Current Use of Contraception, by Educational Attainment, for Married Women Aged Under 50, 1976 and 1979: Indonesia

Educational Attainment	Distribution of Women, 1979 (percent)	Proportion of Current Users (percent)	
		1976	1979
No school	35	16	26
Incomplete primary school	37	17	31
Primary school	21	22	36
Junior high school	4	31	45
Senior high school	3	41	51
All levels	100	18	31

Sources: 1976 SUPAS II (Central Bureau of Statistics, 1978a:Table 20); 1979 SUSENAS (Central Bureau of Statistics, 1981a:Table 7).

absence. (Among the small numbers relying on the latter method, seven times as many respondents in 1979 pointed to female as to male sterilization. Tan [1971] notes that there is a popular confusion of vasectomy with castration.)

There are wide regional variations in contraceptive use in Indonesia. In large part these differences reflect the uneven incidence of Indonesia's family planning program, which in its early years was concentrated on Java and Bali. Even within Java, however, provincial differences in use rates are striking and presumably are the product of more than simply program-related factors. The regional differences revealed in the various surveys over 1973-80 are shown in Table 21. For 1976, the Indonesia Fertility Survey estimates, in parentheses, are substantially higher than those from SUPAS II in Jakarta, Central Java, and especially Yogyakarta. It should be expected that the elaborate WFS schedule used in the former survey would yield better measures of contraceptive use. The discrepancies are not uniformly reduced if the WFS prevalence rates for current use of a modern contraceptive method (or current use of a "program method") are used instead in the comparison, but there is enough indi-

TABLE 20 Proportion of Married Women Aged 15-49 Reporting Current Use of Contraception, by Specific Method, 1976, 1979, and 1980: Indonesia

	Current Users (percent)		
Method	1976	1979[a]	1980
Pill	11	17	14
IUD	4	6	7
Condom	1	1	1
Other methods	2	7	5
Any method	18	31	27

[a] Four percent of married women aged 15-49 in 1979 reported more than one method currently used. Lacking further specification, these multiple users are included under users of "other methods."

Sources: 1976 SUPAS II (Central Bureau of Statistics, 1978a:Tables 18, 25); 1979 SUSENAS (Central Bureau of Statistics, 1981a:Tables 6, 9); 1980 census (Central Bureau of Statistics, 1982a:Tables 25, 26).

cation to suggest that confusion on this score in SUPAS II is the main source of the differences. In Yogyakarta, the higher WFS prevalence rate is nearly all accounted for by "traditional" methods.

The government's family planning program service statistics are another source of information on contraceptive prevalence--not wholly independent since they are periodically calibrated against survey results. In general the prevalence levels derived from service statistics, originating in the records of service providers, have more or less been borne out by later survey estimates of users (see, for example, the comparisons made in Sinquefield and Jones, 1976, and Sinquefield and Sungkono, 1979). As speculated earlier however, energetic program delivery efforts would tend to elicit inflated use-rate estimates; if this is in fact the case, it would be reasonable to expect service

TABLE 21 Percent of Married Women of Reproductive Age (15-49) Reporting Current Use of Contraception, by Broad Region, 1976, 1979, and 1980: Indonesia

Region	1973[a]	1976[b]	1979	1980[c]
Java	9	24 (26)	35	31
Jakarta	u	24 (28)	28	27
West Java	5	14 (16)	24	23
Central Java	9	21 (28)	35	31
Yogyakarta		21 (40)	39	39
East Java	12	35 (32)	47	38
Sumatra	3	5	20	16
Kalimantan	u	4	23	17
Sulawesi	4	6	31	25
Bali	21	33 (38)	46	21
Other Islands	u	u	13	
Indonesia[d]	u	18	31	27

Note: u = unavailable.

[a] Use-rates for Java exclude Jakarta and are for women aged 15-44.

[b] Figures in parentheses are 1976 World Fertility Survey estimates.

[c] Regional use rates computed using denominators from 1979 SUSENAS and then adjusted to make their weighted average equal the 1980 Indonesia use rate.

[d] See Appendix for limitations of survey coverage.

Sources: 1973 Fertility-Mortality Survey (Demographic Institute, 1974-75; Jones, 1977:35); 1976 SUPAS II (Central Bureau of Statistics, 1978b:Table 16; Chernichovsky and Meesook, 1981:Table A4); Indonesia Fertility Survey (1978:Table 5.6); 1979 SUSENAS (Central Bureau of Statistics, 1981c:Table 6); 1980 census (Central Bureau of Statistics, 1982a:Table 27).

statistics to be affected more than survey responses. Sometimes, moreover, use rates from service statistics are raised relative to survey estimates by adjustments to the denominator that narrow the definition of eligibility beyond the criteria of age and current marital status. The province where the program has reported greatest success, East Java, best illustrates the situation:

TABLE 22 Contraceptive Use-Rates from Service Statistics: Percent of Married Women Aged 15-44 Using Program Methods of Contraception, by Broad Region, 1971-81: Indonesia

Year	Java and Bali (1)	"Outer Islands I" (2)	"Outer Islands II" (3)	Indonesia (4)
1971	3			3
1972	8			6
1973	12			9
1974	17	2		11
1975	21	4		15
1976	24	6		17
1977	30	10		22
1978	37	11		27
1979	42	14	3	31
1980	44	16	5	33
1981	50	23	9	39

Note: "Outer Islands I" is the region to which the government family planning program was extended in 1971--Sumatra excepting Riau, Jambi, and Bengkulu; West and South Kalimantan; North and South Sulawesi; and West Nusatenggara. (The program began in Java and Bali in 1970.) "Outer Islands II," the remaining provinces containing about 10 percent of Indonesia's population, were brought into the program in 1979.

Source: (1) to (3) National Family Planning Coordinating Board monthly service statistics reports; (4) weighted average of regional use rates, assuming minimum use-rate of 2 percent.

service statistics for 1980 show a use rate (for married women aged 15-44) of above 60 percent; the 1980 East Java Population Survey (Sullivan, 1982) recorded 45 percent (42 percent for ages 15-49); the 1980 census in East Java found 37 percent for ages 15-49. With this caveat, the use rates for program methods of contraception (pills, IUDs, condoms) compiled by the Family Planning Board are given in Table 22.

OTHER PROXIMATE FERTILITY DETERMINANTS

Three other proximate determinants can be mentioned briefly: induced abortion, abstinence not associated with lactation, and subfecundity or sterility. The brevity of the discussion is dictated by the meager data available on these subjects.

Induced Abortion

Induced abortion is both illegal and culturally proscribed in Indonesia. Respondent information on the subject, as in many other countries, is widely and properly regarded with considerable skepticism by demographers. In a small number of studies, however, research conditions and researcher interests have been such as to lend credence to the findings. Two such studies are noted here, both in Yogyakarta Special Region.

In their 1969-70 study of Mojolama, Singarimbun and Manning (1974) conclude that there is no evidence to suggest that abortion is widespread. Attitudinal data showed greater toleration of abortion at lower economic levels (74 percent of women in landless families disapproving, compared to 92 percent in families owning 0.4 ha. or more), but no apparent efforts were made to invoke moral or legal sanctions against those known to have had abortions: "Despite general disagreement with abortion there was nevertheless a considerable degree of tolerance towards both those who executed abortions and women who terminated their pregnancies through abortion." It may be noted that abortion's legal status was not well known in the population.

The 1972-73 study of Maguwoharjo by V. Hull (1975) confirms the extreme sensitivity of the topic. Although some respondents knew of cases of induced abortion, no basis could be developed for quantitative assessment of incidence. Any impact on overall fertility levels or fertility differentials, however, was judged negligible.

Focus-group studies--structured informal discussions with small panels of respondents away from their homes (in settings in which respondents probably feel more anonymous than in a one-to-one interview)--offer another potential source of information. Results of a study of this kind in Jakarta (Suyono et al., 1981) suggest that a fairly wide knowledge of abortion methods might exist in the population; the study did not explore respondent views of prevalence.

Many hospitals in Indonesia routinely offer menstrual regulation procedures. They also, of course, treat abortion complications. Studies based on hospital records of abortion complications are consistent with a generally low but not negligible incidence of induced abortion, although ambiguities abound in these materials and interpretations of them vary quite widely (see the review by Utomo et al., 1982). Typical findings are noted below:

- Ujung Pandang (Sulawesi), 1972-74 (Sopacua et al., 1974): A study of hospital records of abortion cases over two years found 62 cases identified as induced abortions (treated for complications), although some of the other abortion cases, classified as spontaneous, may have been mislabeled. The majority of the induced cases resulted from treatment by traditional practitioners (dukuns); two-thirds were women of parity 4 or above (median age late 20s); most were women of "higher" socioeconomic status.

- Denpasar (Bali), 1979-80 (Surya and Manuaba, 1980): Records of some 1,000 cases of induced abortion complications over a 16-month period at a public hospital were reviewed. Half were attributed to delayed use of menstrual regulation procedures by general practitioners (it was not clear whether patient or physician was more often responsible). In most cases no contraception had been used; most women already had several children.

- Jakarta, c. 1975 (Rushwan et al., 1977): Women hospitalized for abortion complications classified as septic were considered most likely to have had illegally induced abortions. Based on 153 such cases, characteristics of women were as follows: median age, 27 years; median parity, 3.2; median number of living children, 2.9; proportion wanting no more children, 62 percent.

- In a larger study of kabupaten hospitals in Indonesia in the early 1970s, it proved impossible nine times out of ten to determine from the record if the abortion was spontaneous or induced (Soetopo, n.d.).

From the available data, the general conclusion can be drawn that induced abortion is not a significant factor in Indonesian fertility. However, this conclusion is tentative, and the subject warrants further investigation.

Abstinence

As a category, abstinence is an ill-defined area among proximate fertility determinants. Leaving aside postpartum abstinence (discussed previously), abstention from sexual relations to avoid pregnancy may be difficult to distinguish from involuntary abstinence through couple separation, and in its fertility effect, from the rhythm method of contraception. The Indonesia Fertility Survey did not separate postpartum from other forms of abstinence; in particular, it did not try to identify terminal abstinence, believed quite common in Java from the time a woman becomes a grandmother--as early as her mid to late 30s. Given its orientation toward contraceptive technique, the WFS schedule would tend anyway to underrecord behavior so enmeshed in cultural attitudes. For what they are worth, the Indonesia Fertility Survey results for knowledge and practice of abstinence and rhythm by married women in Java and Bali are as follows (in percent; Indonesia Fertility Survey, 1978:Tables 2.1.1, 2.3.1, 2.4.1):

	Abstinence	Rhythm
Heard of	12.8	11.7
Ever used	3.5	2.7
Currently used (among exposed women)	1.4	1.2

The data show no substantial increase in stated current use by age, suggesting either that terminal abstinence is not very important or, more likely, that its practice is not captured in the responses. (Analogous proportions both for Java and for all of Indonesia from SUPAS II and the 1979 National Socioeconomic Survey are lower still; see Central Bureau of Statistics, 1978a, 1981a.)

There is no reason to believe that involuntary abstinence has a significant fertility impact in Indonesia. The same improvements in transport and in general economic conditions that have facilitated short-term labor migration make extended absences unnecessary for the great majority of migrant workers.

Voluntary abstinence as a fertility depressant in Indonesia seems largely restricted to Central and East Java and Yogyakarta, i.e., to the ethnic Javanese. As noted earlier, it is being supplanted as a postpartum practice by modern contraception (though it is unclear whether this is a "demand" phenomenon--for more convenient means of fertility control--or a "supply" effect of a vigorous family planning program tapping the most accessible part of its market). Whether other kinds of abstinence are being similarly affected is not known, but it seems likely that they are.

The contraceptive technique that most obviously meshes with abstinence is the rhythm method (see Singarimbun, n.d.). However, greater use of rhythm is not a family planning program goal in Indonesia--quite the reverse, in fact. The remarkable expansion of its use that has been observed in the last decade in the Philippines (and for which the Philippine family planning program, after reluctantly accepting it, has sought credit) does not seem to have a parallel in Indonesia.

Subfecundity

Among ever-married women in Indonesia at the later childbearing ages, some 5 percent were recorded in recent surveys as never having had a live-born child. The percentages by age were as follows (Central Bureau of Statistics, 1978a, 1981a):

	25-29	30-34	35-39	40-44	45-49
SUPAS II (1976)	8.2	5.8	4.9	6.4	7.2
SUSENAS (1979)	7.5	4.9	4.8	4.8	6.2

Considering the possibilities for error in household surveys, where the respondent may be answering for other household members, the results agree quite well. There are striking differences by region. In 1979, for example, Java and Sumatra showed the following patterns:

	25-29	30-34	35-39	40-44	45-49
Java	7.7	5.7	5.8	5.4	7.5
Sumatra	7.1	3.3	2.4	2.4	1.7

The other major regions were intermediate between these two, but closer to Sumatra than to Java (Central Bureau of Statistics, 1981a). A small part of these fractions may be accounted for by fecund women who were widowed or divorced soon after marriage and thereafter remained single, but that is a rare occurrence. For the most part, the numbers presumably reflect female or male infecundity.

In a study of childlessness recorded in the 1971 census, T. Hull and Tukiran (1976) argue that [illegible] women for whom the number of children ever born was "not stated" were also in fact childless. Such an adjustment substantially inflates the census estimates of rates of childlessness (though not the survey-based percentages given above). Using as a summary index of primary sterility the age-standardized proportions childless (or not stated) among ever-married women age 30 and older, Hull and Tukiran found comparatively low sterility (below 10 percent) in Sumatra and most of Sulawesi, and comparatively high sterility in Kalimantan and Maluku. Java and Nusatenggara were both close to the country-wide average of 12 percent, but showed marked interprovincial variation: levels well above this average were recorded in East Java, Bali, and East Nusatenggara.

The Indonesia Fertility Survey in Java and Bali recorded respondents' self-reported beliefs about their fecundity by asking the following question (of currently married, nonpregnant women): "Do you think it is physically possible for you and your husband to have a child, supposing you wanted one?" Percentages reporting fecundity impairment among women in two age groups with no and one or more living children were as follows (Indonesia Fertility Survey, 1978:Table 1.3.2):

No. Living Children	25-34	35-44
0	13	38
1+	4	25

Reported infecundity was slightly higher than average in Central and East Java, slightly lower in West Java and Bali.

These large surveys can tell us little about what underlies such figures. The apparent regional differences in particular require further investigation, both to exclude possible data errors and to uncover the pathological factors that may be responsible.

In her study of Maguwoharjo in Yogyakarta, V. Hull (1975) found a substantial gradation in fecundity by income level--part of the proximate explanation for the positive association between fertility and socioeconomic status that is found at the low and middle status levels in Java. (Other parts of the explanation are differential durations of postpartum abstinence and patterns of marital instability, noted earlier). Hull and Hull (1977:54) speculate that the greater prevalence of infecundity among low-income women "may be due to deficient diet and higher incidence of disease among the poor, and particularly to their greater susceptibility to tuberculosis and venereal disease, which often go untreated. It may also be related to infections following childbirth; the poor are much more likely to have births attended by traditional village midwives than are the wealthy." In a village study in South Sulawesi conducted at about the same time, Lineton (1975) argued that the low completed fertility she observed was in part a result of ill health (especially malaria).

DISCUSSION

How consistent are the estimates of total fertility presented at the start of this chapter with the various conclusions drawn about specific proximate fertility determinants? This question can be investigated using the accounting scheme devised by Bongaarts (1978, 1982). Going beyond the Coale decomposition used in the earlier discussion of marriage patterns and marital fertility, Bongaarts' approach also decomposes marital fertility into components corresponding to the proximate determinants. The first step involves establishing a biological numéraire, the total fecundity rate (TF). Defined as the total fertility rate in the absence of reproductive time spent out of marriage and with no use of contraception, induced abortion, or lactation, total fecundity appears to be fairly uniform across populations. It averages approximately 15 live births per woman, although values ranging from 13 to 17 have been estimated (Bongaarts, 1978:Table 2). The procedure yields a decomposition of the difference between total fecundity and the actual total fertility rate into factors isolating the effects of the main proximate determinants. In their multiplicative form, these factors, known as Bongaarts indices, comprise indices of proportions married (C_m), contraceptive use (C_c), prevalence of induced abortion (C_a), and postpartum infecundability (C_i), constructed so that together they deflate total fecundity to total fertility. The intermediate points between the total fertility and total fecundity rates are the total marital fertility rate (TM) and the "total natural marital fertility rate"

(TN)--the latter defined as TM in the absence of contraception and induced abortion. Where, as in Indonesia, abortion can be considered negligible, C_a can be taken as unity. The simple decomposition identity is then

$$\begin{aligned} TFR &= (TFR/TM)\ (TM/TN)\ (TN/TF)\ (TF) \\ &= C_m \cdot C_c \cdot C_i \cdot TF. \end{aligned}$$

For Indonesia, the total fertility rate in the mid 1970s (1980 census "own-children" estimates for 1974-76) was 5.07. Total marital fertility, using proportions currently married from SUPAS II (Central Bureau of Statistics, 1978a) was 7.44, giving an estimate of C_m of 0.68. The contraceptive use rates by method from SUPAS II (Table 12), adjusted for effectiveness, yield an index of contraception, C_c, for the mid 1970s of 0.83. Finally, in the absence of indications that breastfeeding patterns are markedly different outside Java, we might assume mean and median durations of breastfeeding based on the WFS finding for Java and Bali of 19 and 22 months, giving an index of postpartum infecundability, C_i, of 0.58 (see Bongaarts, 1982:Table 3). This last index is the weakest empirical link in the chain.

These estimates can then be combined to give an implied total fecundity rate:

$$TF = TFR/(C_m \cdot C_c \cdot C_i) = 15.6.$$

An alternative method of estimating marital fertility, discarding the observed rate at ages 15-19 as being unreliable and inferring this rate instead from the age group 20-24, is recommended by Bongaarts; this procedure gives a total fecundity value of 14.5. In either case the implied total fecundity is centrally within the range of the empirically found levels. Considering the many uncertainties in the underlying data, this at least is an encouraging result.

We can now attempt to quantify the proximate factors behind the Indonesian fertility decline. Data on proportions married in the 1971 census and 1967-70 age-specific fertility rates from Table 12 yield values of TM and C_m for around 1970. For contraceptive use in 1970, an average use rate of 5-7 percent and average use-effectiveness of 80-90 percent would be consistent with the materials reviewed earlier (principally Tables 21 and 22), giving a C_c estimate of 0.94. Then on the assumption that total fecundity remains constant at a level of 15.6 (constancy is reasonable to assume, and the precise level of TF does not affect the argument), the implied value of the postpartum infecundability index C_i for 1970 would be 0.54.

An increase in C_i reflects a decrease in postpartum infecundability: a drop of one month in average duration raises the index by about .02. The change from 0.54 to 0.58 over 1970-75 is thus consistent with our micro-study evidence on infecundability.

What can be said about shifts in proximate determinants over the second half of the 1970s? Proportions married from the 1980 census give a C_m value of 0.65. Contraceptive use in 1980, from Table 20 implies a C_c of 0.74. The 1970-75 decline in duration of postpartum infecundability very probably continued--perhaps raising C_i by the same amount over 1975-80 as over 1970-75; if so C_i in 1980 would be 0.62. Combining these values (and assuming the same total fecundity as before), we obtain an implied 1980 total fertility rate of 4.6. The time series then would be as follows:

	c. 1970	c. 1975	c. 1980
C_m	0.70	0.68	0.65
C_c	0.94	0.83	0.74
C_i	0.54	0.58	(0.62)
TFR	5.5	5.1	(4.6)

where the parentheses indicate a fairly high level of uncertainty.

There is, however, no direct evidence on recent levels or changes in infecundability. As an alternative, more conservative assumption, suppose that there was no change in C_i between 1975 and 1980. The estimate of C_m is reasonably secure; hence there would need to be a compensating adjustment in the 1980 total fertility rate in order to restore the accounting identity for that year. The 1980 TFR would be decreased from 4.6 to 4.3. Either of these values for total fertility is in fact entirely possible: the 1980 census estimate of the rate for 1978-79 ("own children" method) is 4.3 (Central Bureau of Statistics, 1982b), although this figure almost certainly understates fertility at that time (it incorporates a very low estimate for 1979, the year prior to the census). Independent information on fertility around 1980 from future demographic surveys will clarify this situation.

This area of uncertainty does not, however, affect the broad picture of the Indonesian fertility decline and its proximate determinants. Total fertility most likely dropped by nearly one child per woman between the late 1960s and the end of the 1970s. Falling durations of postpartum infecundability, ceteris paribus, would have raised total fertility over this period--probably by around 0.5 and possibly by as much as 0.7 or 0.8. The increase in female age at marriage was counterbalanced in its effect on proportions of women married by falling rates of divorce and widowhood. The net effect was a barely noticeable downward influence--taking off perhaps 0.1-0.2 from total fertility. The widespread adoption of modern contraception was the dominating influence: by itself, it would have cut total fertility by 1.5-2; in the presence of the offsetting infecundability effect, it could still account for nearly all the estimated 0.9 fall in total fertility.

This accounting for fertility does not address the important issue of individual intent. The low recorded level of contraceptive use in the 1960s does not necessarily reflect a near absence of parental actions taken to space births and limit their number, a point emphasized above in the discussion of abstinence. Many of the same uncertainties about the "naturalness" of pretransition fertility mentioned before with reference to nineteenth-century Java exist for Indonesia as a whole well into the 1960s.

CHAPTER 4

ANALYSIS OF FERTILITY DECLINE

We have seen, none too clearly, the proximate reasons for Indonesia's fertility decline. In light of the earlier discussion (Chapter 2) of the socioeconomic and cultural context, the purpose of this chapter is to go as far as possible toward explaining the decline. Limitations in our knowledge of the fertility determinants as a generic theoretical problem and of the specific empirical circumstances of the Indonesian case militate against reaching conclusive findings. We can, however, hope to narrow substantially the range of plausible explanations of the fertility decline thus far. There will inevitably remain room for argument over the detailed weighting of determinants.

Chapter 3 has set out the explicanda: an overall decline of some 15-20 percent in total fertility over the period from the late 1960s to the late 1970s, greater in Java and Sumatra than in the other major regions, mostly a consequence of lower marital fertility. Within marriage, the proximate determinants of the decline were a rapid increase in use of modern contraception in Java and, late in the 1970s, increasing use in other regions as well. At the same time, some part of this increased use substituted for or overlapped with traditional birth-spacing practices that were widely prevalent, especially in Java, in earlier periods. The available data do not allow more than a cursory locating of the fertility decline in socioeconomic and sociocultural terms.

The grist for an explanation of the course of fertility in Indonesia was assembled in Chapter 2, and we now examine from an explicitly demographic standpoint the patterns of change outlined there. Various possible organizing frames could be used to order such an analysis. The NAS Panel on the Determinants of Fertility in Developing Countries has emphasized a framework in which the onset of fertility decline is seen as a shift from a regime of "natural fertility" to one of deliberate individual birth control by parents (Bulatao and Lee, 1983). Once within the calculus of parental choice, fertility responds to changes in parents' demand for children (itself influenced by child survival chances) and in the costs of fertility regulation.

The present study makes use of a somewhat different approach: fertility behavior is seen as enmeshed in an economic, social structural, and sociocultural matrix, varying as components of this matrix change. The domain of consciously adaptive behavior by individuals or couples may initially be very narrow (as in the case of natural fertility) or quite large, but is not assumed in either case to follow a prescribed course over time. Rather, it is seen as governed by the patterns of institutional and cultural change in the society--patterns that bring certain factors into apposition with fertility, but not others. Tracing these patterns is part of the analytical task. Moreover, different groups in the population, particularly as defined by culture and economic settings, may experience different kinds of fertility transition.

Three broad routes by which changes in socioeconomic and cultural context impinge on fertility can be distinguished (McNicoll, 1979): (1) through alterations in the array of economic benefits and costs associated with marriage and fertility; (2) through shifts in social or administrative pressures bearing on fertility-related behavior; and (3) through changes in people's internalized values concerning marriage, fertility, and family. (In practice, this three-way division is inevitably somewhat arbitrary.) For each of these routes, the discussion below explores, qualitatively and often speculatively, how the changes identified affect the nature of adaptive fertility behavior and fertility outcomes. The family planning program operates through all three, but because of its importance as a single programmatic entity is also discussed separately.

ECONOMICS OF FERTILITY

It is well accepted that fertility decisions have much to do with the economics of children--and indeed that the economic theory of the family, with its assumption of a household production function, can yield important insights about how marital fertility behavior will respond to changing prices. For many, the current issues of contention concern not the reasonableness of this approach, but rather the significance of those dimensions of fertility that do not lend themselves to analysis in such terms. Historically, marriage rates, too, have been found to respond to economic forces in many populations: establishment of a new household has evident economic ramifications for the families of origin and for the couple itself; moreover, because children might become a burden on the community, marriage has also been seen as a legitimate object of public concern. In contrast to this, however, in most developing countries marriage is all but universal and for the woman takes place at a relatively early age; it is rarely seen by society as a feasible means of regulating fertility. For the most part, explanations for secular increases in marriage age and for other changes in marital patterns in these countries are probably better sought in long-run social structural and cultural change than in the economy. (There are some evident exceptions: in Sri Lanka, for example, the very late age at marriage in part reflects economic conditions; more generally, there is the effect on chances of widowhood as mortality falls--in part with economic growth.) This section, then, examines the changing economics of Indonesian fertility in terms of the economic values and costs of children and the costs of fertility regulation.

Economic Costs and Contributions of Children

From a base of virtually zero knowledge about the economics of children as recently as a decade ago, Indonesia has accumulated a respectable number of research studies. Notable among these are White (1976), T. Hull (1975), Sugito (1976, 1979), Saefullah (1975, 1979), and a broad study in the cross-national value-of-children format (Darroch et al., 1981); there are reviews of the subject in Hull and Hull (1976) and Meyer (1981). The regional concentration is the familiar one: predominantly Java, especially the area around Yogyakarta.

These various studies give a reasonably coherent picture of the economics of children in the 1970s, at least for rural Java. They all show that children start to contribute to the household economy from an early age through such tasks as housework, fodder and firewood gathering, caring for livestock, and caring for younger siblings, often freeing adult household members for more productive work (see White, 1976; Saefullah, 1979). However, there is less agreement on the economic significance of this contribution when weighed against child costs.

What are these costs? The study by Sugito (1976) points to food as the main direct cost (as much as 75 percent of the total), with health, education, and clothing expenses also significant. The proportions would of course vary with income class. The formal costs of public schooling at the primary level are quite low (although fees are not adjusted to parents' income), but there are appreciable incidental expenses in the required purchase of school uniforms, shoes, textbooks, paper, and so on. These expenses figure heavily in the reasons parents give for children not going to school or dropping out. Moreover, for the Javanese at least, unlike some other societies (including some other groups in Indonesia) where extended kin ties are stronger, the extent of sharing of child raising costs beyond the nuclear family unit seems to be small (Sugito, 1979).

In contrast to direct costs, the opportunity costs of children to parents are probably slight throughout Indonesia. Child care by older children, neighbors, or relatives is easily arranged. The Value of Children survey conducted in Central and West Java in 1975, sampling currently married women below age 40, found only 3-5 percent of wives saying that the resultant greater difficulty of having a job was the most important reason for not wanting another child. Only 10 percent of wives in this survey said that children prevented them from working outside the home (Darroch et al., 1981:34, 38).

Calculations of net returns to children are highly intricate. White's (1976) study of the village of Kali Loro in Yogyakarta, the most careful attempt to compute these in an Indonesian setting, clearly illustrates the complexities entailed in valuing the diverse economic activities engaged in by children. On balance, in Kali Loro children seemed to yield a positive return. Studies elsewhere in Java, such as T. Hull's (1975) in a more prosperous village in Yogyakarta or Sugito's (1976) in Banyumas kabupaten in Central Java, reach opposite conclusions: that large families impose a substantial economic burden on parents at low- and even middle-income levels. In Hull's view, it is not numbers of children so much as their timing that determines the burden: "For the poor parent the key to childbearing rationality lies in the maintenance of proper spacing between births so the burden of full dependency within the family is minimized" (T. Hull, 1976).

The economic balance is further complicated by the likelihood that children can serve certain insurance functions for the family in a risky environment and one with poorly developed capital markets and other financial institutions. Old age support, not as a routine matter but as a safety net in place, is prominent here (for example, see Saefullah, 1979; Darroch et al., 1981:Table 12). A more general family role in lessening economic insecurity is plausible, particularly in rural areas. However, the additional argument that Cain (1978) has made in the rural South Asian context--that older children may fill a vital security role in preserving family assets against the predation of others--seems less applicable in rural Indonesia. The formal legal system is comparatively strong; community norms of propriety may be eroding (see below), but still have effect; and the pervasive military presence provides another force for local order. It is not that the functional equivalent of social predation (for example, over land titles) never takes place, but rather that where it does, it is likely to have legal authority; the outcome would therefore not depend on the demographic makeup of a particular family.

Perceptions of economic values and costs of children by parents themselves might appear to escape these analytical intricacies, but questions on such matters have an unfamiliar starkness for most respondents that confounds simple interpretation of answers. The Value of Children survey did not attempt to weigh benefits against costs, but merely to investigate the comparative salience of various dimensions of each. Nevertheless, the survey does make clear that economic considerations are widely seen as important in the fertility calculus as a whole. Over two-thirds of the Javanese sample, both husbands and wives, cited tangible economic benefits (rather than "psychosocial" benefits such as companionship or family continuity) as the principal advantages of having children; more than one-third cited financial costs as the principal disadvantage. In both cases the fractions were considerably less among Sundanese respondents, but this was a much more educated and prosperous sample (see Darroch et al., 1981:Tables 6 and 13).

The various studies cited above give us little information about changes over time in the economics of children, but the forces that must be bringing about such changes are readily enough seen.

- The decline in child mortality magnifies any net economic impact (positive or negative) of a given number of births, and at the same time lessens the expected net burden per child by lowering the risk of death--a factor that is likely to be taken into account implicitly in family planning. As Table 10 showed, the increase in the probability of surviving to adulthood has risen by some 20 percent in two decades.

- With the expansion of the educational system has come an increase in the educational attainment needed to have a good prospect for modern-sector employment. The government is the dominant employer of the educated labor force (data for 1976 show a total of 3.6 million employed persons outside agriculture who had junior high school education or above; civil servants at these educational levels numbered around 1.3 million, or about one-third of this total [Central Bureau of Statistics, 1980]). Even a low-level government position is seen as a guarantee of lifetime security and brings with it a higher status than most other occupations. In Sugito's (1979) rural Central Java sample, when village parents were asked what they wished their children to become, 40 percent said "government official." The competition for such jobs has intensified as the large birth cohorts of the 1950s (see Table 10) have entered labor force ages and encountered a government policy aimed at limiting civil service growth and upgrading the quality of entrants. As has happened elsewhere, schooling takes on elements of a job-rationing program. To some degree the private modern sector follows suit, for it too must choose entrants from the greatly enlarged youth cohorts. Thus the link between education and employment prospects outside the subsistence economy becomes a reality that parents have to face--a reality manifested in strong competition for high school (and a fortiori, university) places.

- The much improved economic conditions of the 1970s that benefited many families led to an influx of consumer goods and services, accompanied by media advertising to generate new markets for them. The result was a transformation of consumption patterns, as noted in Chapter 2. Rural as well as urban areas and low-income as well as middle- and upper-income families have been affected. For fertility, the new goods and services in effect raise the relative costs of children, and the simple economic expectation would be for a downward shift in "demand" (see Lindert, 1980); analysis of the 1976 SUPAS II in fact shows a clear negative association between ownership of modern consumer durables and fertility, albeit in cross-section (Chernichovsky and Meesook, 1981:57).

- Accompanying the improvement in average incomes has been a series of changes in technology and institutions that have made working conditions more difficult for many people. Better transport has had a positive effect on labor productivity, but at the same time has broken down the boundaries of personalized local labor markets and eliminated many jobs that had grown up precisely because of transport inefficiencies. Lengthy commuting to work, from countryside to city as well as from the urban fringes, has become common throughout Java, with commuting time representing (as it does in the industrialized world generally) an invisible detraction from welfare. The seemingly inevitable counterpart to increased purchasing power and greater choice of goods is an increased need (genuine as often as artifically created) for the new expenditures. The impact on fertility suggested in the preceding point is thus likely to be amplified.

- A variety of technological and social changes have probably already begun to raise the opportunity costs of children for rural women. Agricultural tasks like harvesting and threshing, formerly the near-exclusive domain of women, have been transformed by new social arrangements (contract labor) and new equipment (sickles and mechanical hullers), cutting down overall labor demand and replacing female by male workers. Alternative employment outlets for rural women--market trading, urban domestic service, and commuting to jobs in the towns--are on balance likely to be less compatible with childbearing and early childrearing as well as with the casual minding of others' children. (For detailed studies of the degree of incompatability of some of these new occupations with fertility, see Partini and Peluso, 1977, and Rens, 1980.)

Fertility Regulation Costs

Prior to large-scale government distribution in the 1970s, commercially imported supplies of contraceptives (subjected to a heavy import duty) were distributed in Indonesia--sporadically, mainly in the cities, and at high prices--through pharmacies and private physicians (Singarimbun, 1970). From quite early in its history, contraceptive services and supplies delivered through the government family planning program in Indonesia have been free (aside from a "registration" fee charged to most clinic users). The effective monetary cost depends mainly on their accessibility to potential clients and on the cost of treatment of any side-effects.

In accessibility, until very recently the program has differed widely by region. In Java and Bali, some 2,000 family planning clinics were in operation by early in the 1970s. By 1977 each administrative village (kelurahan) had a Village Contraceptive Distribution Center. Increasingly, stocks were maintained in depots within each hamlet, further reducing any inconveniences of access (see T. Hull et al., 1977). In the other provinces, the program began later in the decade (see Table 22), extending to the so-called "Outer Island II" region, the final 11 provinces to be covered, only in 1979-80. By 1980 there were over 5,000 clinics nationwide, with an average 4,500 "eligible couples" (married with wife aged 15-44) per clinic in Java and Bali and 3,500 per clinic in other regions (Central Bureau of Statistics, 1980)--although in the latter case spread out over an area many times larger than the average for clinics in Java and Bali. The expansion of subclinic distribution centers and depots outside Java and Bali was continuing. Perhaps unique among government programs in Indonesia (and rare among family planning programs anywhere) this massive network has by all accounts been kept reliably supplied over the years. In the 1979 National Socioeconomic Survey Indonesia-wide sample, 80 percent of women who were current users of contraception said they could get family planning supplies in less than one hour, 94 percent in less than two hours (Central Bureau of Statistics, 1981a:Table 13).

A potentially significant expense entailed in use of hormonal contraceptives or IUDs is treatment of side-effects. Such treatment, whether from a government health clinic or a private practitioner, is likely in practice not to be free. Moreover, the expansion of health services has lagged behind that of family planning clinics and distribution centers: in 1976, according to data cited by Freedman et al. (1981), family planning services (if only from a depot or mobile team) were available in 94 percent of kelurahans in Java and Bali, whereas only 30 percent of "exposed" reproductive-age women lived in kelurahans where there was a health clinic or similar facility. With the family planning program's effort to move from its pill dominance toward IUDs, the absolute number of cases needing treatment may well have been rising. This is an area about which we have very little information, however.

While there can be no doubt about the very low monetary (direct and opportunity) cost of modern contraception for most of the population (excluding the small minority--less than 10 percent even in urban areas, according to the 1979 National Socioeconomic Survey--who make use of private physicians and pharmacies), there is little basis for estimating price elasticities of demand. What would prevalence rates be if users paid world market prices for contraceptives or if distribution were through the private sector and unsubsidized? We do not know. How much of the upward trend in use rates is attributable to the convenience and low cost of program supplies in comparison to preexisting alternatives? We cannot say. Research both on the characteristics and motivations of private sector clients and on the experience of commercial marketing of contraceptive products outside the government program would of course shed light on the subject.

SOCIAL AND ADMINISTRATIVE PRESSURES

The main spheres in which changing patterns of social and administrative pressures on families and individuals might affect fertility-related behavior are local government, local community, and family law. Local government is the arena in which official policy interests bearing on fertility are translated, whether effectively or not, into program action; the institutions of local government, together with those embedded in community arrangements, can constrain the scope of individual economic and demographic decision making; and formal legal dictates on marriage and family, while for the most part entangled in this local setting, have at least some residual influence on outcomes.

Local Administration

The toughening of Indonesia's local government structure in the aftermath of the 1965 coup attempt was described in Chapter 2. The government administration that many observers had seen as conspicuously weak and ineffective, loosely channeling downward a confusing and uncoordinated array of line-ministry activities, was transformed into a strong and, in some domains, single-minded instrument of central policy--initially with overriding interests in internal order and stability, but increasingly with broader development concerns. While line-ministry involvement continued, horizontal administrative divisions took on new significance: the roles of provincial governor, *bupati*, *camat*, and *lurah* were strengthened and assigned greater responsibility. Many positions in the civil administration came to be filled by former military officers, and at the *kelurahan* level by former NCOs; the parallel military hierarchy expanded its security functions. Both civil and military authority was for the most part unattenuated by cross-cutting political forces. Target setting had always been popular, but for the first time meeting targets became a serious activity and competition among local *kelurahan*, *kecamatan*, and *kabupaten* units was encouraged in a number of different program areas. A symptom of this new level of administrative intrusiveness is what a cynic has referred to as "statistical involution," the extraordinary efflorescence of recordkeeping at the *kelurahan* level over the past few years, with village statistics counting every duck, radio, and bicycle--and even the purported numbers of households practicing contraception--compiled on wall charts in the village hall for all to see.

Two demographic implications of these changes can be discerned, difficult to quantify though they are. Most evident of these is the capacity to translate the new top-level commitment to fertility reduction into similar commitment at the various levels of regional and local administration, combining unity of purpose with devolution of authority for effective action. The national family planning program, in consequence, could be energized by its close association with Indonesia's administrative structure. This effect can be seen most notably in the province of East Java, where rapid increases in prevalence rates for program-supplied contraceptive methods are partly attributable to the strongly supportive involvement of provincial and local government officials. (The encouragement of this decentralization and local-government participation in turn owes much to the system of program management developed by the Family Planning Board.)

A less tangible but highly important consequence of the post-1967 administrative changes was a sudden quieting, in fact virtual halting, of village politics. Discussing the situation of the 1950s, Clifford Geertz (1959:40-41) argued that nationally based party politics gave to village life "an insupportably erratic and capricious quality":

> The extreme inconstancy and opportunism of Indonesian national political life keeps the village continually stirred up, continually uncertain of what to expect next, and so prevents it from stabilizing relations among alirans [cultural-ideological "streams"] within its own boundaries in such a fashion as to take full advantage of the organizational facilities they provide . . . . If some sort of fixed pattern can be impressed upon party politics at the top, then the promise of a new village society organized in terms of groups at once politicized and specialized, at once national and local, can, it is hoped, be realized.

Geertz was writing particularly of the Javanese village, but the picture seems to apply more generally. The continual stirring up that he describes also most likely precluded the kind of contextual stability needed for individual villagers to establish a fertility calculus based on a vision of future local economic realities, or for governmental population policy (had it been contemplated) to work through groupings at the village level or below. Over the past 15 years, during which time a "fixed pattern" of party politics has indeed existed, the salience of these economic realities for fertility decisions has been enhanced. Similarly, there was for the first time scope for efforts at local mobilization behind population policy goals. The depoliticization of village life helped to ensure that there was no misapprehension about the government's program goals in population and that there were no attacks of any consequence on the program on moral grounds (or on political grounds masquerading as moral).

Community Influence

A different kind of change in social pressures relevant to fertility behavior that has been taking place in Indonesia is an erosion of informal village authority structures. In Java, the increase in numbers of people commuting daily to work, even from fairly remote villages, was noted earlier in connection with its effect on the families concerned; its effect on communities may be equally pronounced, blurring village identities and narrowing their functions. While still far from creating the bedroom communities of modern western societies, the trend moves Java closer to, say, the Sri Lankan pattern of comparatively undifferentiated rural settlement, as well as to Sumitro's (1977) vision of Java's future as an island city. Other factors that are also weakening territorial-based social organization include the purchase of village land by city dwellers, the widening of income disparities among families, the greater exposure of rural youth to urban life styles and habits, and the present government's suspicion of virtually any spontaneous local organizing activity that is not within its control or directed toward its own program goals.

The term village is used loosely here. In Java, as noted in Chapter 2, solidarity would mostly be found at the _pedukuhan_ (natural village or hamlet) level, or in even smaller neighborhood groups, and rarely for the _kelurahan_ (administrative village) as a whole. The pattern, however, varies markedly in other regions, and much less is known elsewhere of changes currently taking place. (Bali, where hamlet councils, known as _banjars_, have acquired wide renown in population policy circles through their role in the provincial family planning program, is an obvious exception.)

What effects on fertility plausibly follow from these changes in community strength and function? The most immediate would be a decline in social pressures for conformity in demographic matters--principally on the questions of birth-spacing and early female marriage. The traditional view in much of Java that close spacing of births is irresponsible finds its support not in some abstract constancy of Javanese culture, but in the day-to-day slights that its violation would incur from neighbors and other community members. The social influence of people's views about birth-spacing, irrespective of how those views may be changing (a subject examined below), depends importantly on the strength of the local solidary group. The same is true of social pressures on families for early marriage of daughters.

Another likely, though indirect, effect on fertility of a lessened community role follows from the greater economic autonomy of families. The rich are under less pressure (and have less need) to transmute part of their wealth into patronage; the poor have weaker claims on the better-off in the community for subsistence. Again, as in the case of the imposed political quietude, the economics of fertility come to the forefront in decisions about family well-being and about the separate best interests of husband and wife.

It is argued that the family planning program in Indonesia has acquired particular strength precisely by working through community groups--by drawing on existing community solidarities to reach target numbers of contraceptive users. Most of these efforts, however, seem more appropriately classed as drawing on existing _administrative_ arrangements. The role of genuine community groups--women acceptors, mainly--is fairly modest (Bali again may be an exception), and is probably felt more in improving the quality of family planning services than in expanding their reach.

It may be noted that there are some countervailing directions of change tending to strengthen patterns of social conformity. In the more strongly Islamic regions of Indonesia--Aceh, much of West Java, northern East Java, South Sulawesi--religion plays such a role. If it is less a force on the national political scene, it may be more of one in many day-to-day activities. Islamic revivalism in the Middle East has resonances in Indonesia.

Civil Law

A third potential source of social-administrative pressure impinging on fertility decisions is the legal system. In matters pertaining to the family, Indonesia has a confusing overlay of traditional law (_adat_), varying by region, Islamic law, and Dutch-based civil law. The interplay of these codes and the gradual evolution of an "Indonesianized" national law are discussed by Lev (1972). In family law, an important stage in this process was adoption of the new Marriage Act in 1974 (see Katz and Katz, 1975, 1978). This law gives a prominent role to the civil courts in divorce and in so doing renders divorce more difficult than when it was governed for most people by Muslim and adat law. The other main change incorporated in the Marriage Act, the fixing of minimum ages at marriage for men and women, seems in the near term unlikely to have much impact on actual practice: public knowledge of the law's provisions is scanty and enforcement slight. (The law also makes polygyny more difficult, but this practice was never common.)

Legally, contraception has remained in a cloudy area, but in Indonesia as in some other countries its formal legal status now has no practical significance. The one exception is sterilization, which has not yet been included in the national family planning program and is opposed by several influential Islamic groups (see Singarimbun et al., 1982). Abortion is a very different matter, however. There may well be increasing recourse to abortion as family-size variance decreases and as the perceived consequences of contraceptive failure come to loom larger to parents. However, there are no indications that legal abortion on demand is likely to come in Indonesia.

Finally, in contrast to those in most other Islamic countries, women in Indonesia are not legally (or extralegally) disadvantaged in property ownership; this removes one potential source of insecurity and hence, it is frequently argued, one motivation for women to want early and high fertility. In many regions outside Java, traditional descent rules are patrilineal, and inheritance, still dominated by local adat law or by Islamic faraidl principles, disfavors women to some degree (see Suwondo, 1955; Ihromi et al., 1973). Increasingly, if slowly, however, inheritance everywhere is becoming bilateral as national civil code rules extend the domain of "modern" family law.

MENTALITÉS

If the factors discussed thus far exhausted the determinants of fertility, the task of analysis would be comparatively simple. They do not, however. Perhaps as important and probably more fundamental in influencing fertility is the way people think about children and childbearing--how they construe this part of their world. (This dimension, lacking a simple English term, is most simply described as mentalitiés.) How people construe their world, of course, is highly dependent on economic realities and on the constraints imposed by existing social arrangements, but these tangibles are ordered and modulated by culturally rooted perceptions. In explaining the basics of getting a living, little may be lost in ignoring this dimension: a mounting body of evidence has shown behavior in that sphere to be in large part culture-free. Fertility, however, tied as it is to the central realities of social life and to people's intimate behavior, is altogether a different matter: if anything were culture-bound, this would be it.

But bound to what exactly? Three subject clusters are particularly relevant in setting the cultural context of fertility decisions. The first concerns individual autonomy and aspirations: What is the perceived scope of an individual's decision-making? Where does he see it constrained by family or civil authority or by the supernatural? What is his vision of the future along his own life cycle? The second concerns the image of the family that a person has internalized: the family's ideal make-up in terms of the numbers and timing of children, its economic role, expectations about relationships between spouses and between parent and child, and so on. The third concerns attitudes that bear on fertility regulation: the degree of awareness of the possibilities of regulation and beliefs about the legitimacy of such regulation, both in general and for specific methods.

Clearly, it is often difficult to say whether a particular fertility-related decision outcome (abstracting from the element of biological chance that is always present) owes more to such beliefs and attitudes or to concrete features of the social and economic environment. The two are linked, and the analyst's starting point is necessarily somewhat arbitrary. In accounting for time trends in fertility, as in other areas of behavior, more conviction usually attaches to socioeconomic explanations, with culture introduced as a residual factor; however, this reflects the comparative development of methods of analysis as much as judgment about the determinants of behavior. No attempt is made here to assign even a rough weight to changes in mentalités in the current Indonesian fertility decline. We can, however, suggest the ways in which ongoing patterns of social development are making for such changes, concentrating on the three content clusters described above.

Individual Autonomy and Aspirations

The impact of schooling on individual attitudes toward family, career, and authority is a common theme in writings on social development. Many of the characteristics that have come to be used to define "modernity" at the individual level can be directly associated with school experience. In their classic cross-national study of six developing countries, Inkeles and Smith (1974:143) summarized their quantitative findings on the effects of education beyond "reading, writing, and figuring" as follows:

> Those who had been in school longer were not only better informed and verbally more fluent. They had a different sense of time, and a stronger sense of personal and social efficacy; participated more actively in communal affairs; were more open to new ideas, new experiences, and new people; interacted differently with others, and showed more concern for subordinates and minorities. They valued science more, accepted change more readily, and were more prepared to limit the number of children they would have.

There is every reason to believe that similar consequences are being generated in Indonesia as formal education reaches proportionately larger numbers in successive youth cohorts. We would confidently expect the higher fertility recorded for women with primary school education compared to those with no schooling or incomplete primary school (Table 13) to be a temporary feature of Indonesia's demography.

An additional factor in the Indonesian case, emphasized in the study by T. Hull and Singarimbun (forthcoming), is that most instruction in schools takes place in Indonesian, a language that many parents speak poorly or not at all. (The 1980 census records that 33 percent of the population 25 years and older cannot speak Indonesian; only 10 percent use it in the home; see Central Bureau of Statistics, 1982a:Table 11.) Attitudinal changes produced by rising school enrollments are thus the more likely to be felt as cohort effects over the lives of the children themselves rather than through changes in behavior diffusing through the whole society.

The spread of consumer values is another change affecting individual aspirations, this one not principally a cohort phenomenon. Widely remarked upon (and frequently deplored) within Indonesia, this is seen as a byproduct of New Order policies: an outcome, on the one hand, of the economic recovery and, for many, the relative prosperity created by the oil revenues, and, on the other hand, of the government's encouragement of private economic activity and discouragement of political activity. The contrast with the economic austerity of Sukarnoist Indonesia (which derived as much from necessity as from ideology) is striking. The earlier discussion noted the likelihood of income and substitution effects bearing on fertility from the new array of consumption opportunities; the deeper change is in the implicit legitimation of consumption goals. The spate of advertising and exposure to American and other western film and television programs, in which Indonesia has rapidly been catching up to the conditions found in neighboring countries, is one source of legitimation. The demonstration effect of conspicuous consumption by the urban elite and an expanding middle class is another.

Image of the Family

If imported films and television programs convey Western consumerist values, domestic media productions tend to emphasize the turbulent effects of current social change on families. Without a formal content analysis such an observation is of course impressionistic; however, the themes of lessened parental control over children, of the increasing primacy of conjugal over other kin relations, and generally of the erosion of "traditional" family values occur repeatedly in film, radio, and print. Although such depictions reflect rather than initiate change, they are likely also to influence the expectations that people bring to family life.

Caldwell (1976) has argued persuasively in the West African context that the western nuclear family model is being insinuated into the patriarchal societies of that region through such means as school textbooks and popular magazines. In most of Java, families have been residentially and emotionally nuclear for generations (see H. Geertz, 1961; Jay, 1969), and no radical structural shift--for example, away from kingroup dominance--has to accompany a fall in fertility. In some other parts of Indonesia, where kinship ties beyond the nuclear family have traditionally been much stronger, the process of "emotional nucleation" probably still has far to go. (Residentially, many Indonesian households are lineally extended--that is, they include parents, parents-in-law, or grandchildren of the household head--but very few are laterally extended; see Central Bureau of Statistics, 1982a:Table 4.) Throughout Indonesia, even in the patriarchal and matriarchal societies of Sumatra, parents have traditionally preferred balanced numbers of boys and girls, a typically "modern" pattern (see Indonesia Fertility Survey, 1978:74, for Java and Bali, and Ihromi et al., 1973, for Sumatra). There may well be a continuing gradual change in the balance of felt duties and obligations between parents and children in the latters' favor--an expected consequence, for example, of the expansion of schooling--although we would hesitate to describe this (except perhaps in some of the outlying regions) as a decisive Caldwellian "wealth-flow reversal" (Caldwell, 1982).

Aside from the "revealed preferences" embodied in actual family sizes, there is little evidence about changes in family-size desires in Indonesia. The Java Value of Children survey in 1975 examined preferences of both husbands and wives with considerable care, concluding that "the underlying preference structure was substantially and consistently toward families of four and five children." There was little indication of a decline, let alone signs of adoption of a two-child norm. Desired family size did diminish with shorter duration of marriage, but this simply reflected the expected correlation of desired with actual family size (see Darroch et al., 1981:66-67). The 1976 Indonesia Fertility Survey (1978:72) similarly found almost no association of desired family size with current age or marriage duration, once actual family size was controlled--indeed, the survey report concluded that there was "apparently no widely endorsed family size norm." Sinquefield and Sungkono (1979) do, however, present slight indications of a decline from a comparison of the 1976 results with those of the 1973 Fertility-Mortality Survey.

In addition to revealing something about past preferences, the sizes of actual families in the community are also themselves an influence on attitudes toward family size. The average completed number of children (net of child mortality) presumably helps to set the common image of family life. The distribution of family size is relevant in assessing the degree to which a small family is a cultural innovation--whether it is the rare behavior of "demographic innovators" surrounded by a sea of high fertility or, by intention or fate, a commonplace. The Indonesian data suggest that a characterization of small families as innovative would be far-fetched: among ever-married women aged 45-54 recorded in the 1979 SUSENAS, the percentage distribution by number of children still living was as follows (Central Bureau of Statistics, 1981c:Table 4):

0	1-2	3-4	5-6	7-8	9+
9	24	29	22	12	4

The median size is little more than three living children. The corresponding distribution of women aged 45-54 by children ever born shows that this dispersion is not simply a product of random child mortality:

0	1-2	3-4	5-6	7-8	9+
7	17	22	21	17	16

Perforce or by design, fully one-third of all ever-married women had no more than three children--this in the cohort whose childbearing was essentially completed before the recent fertility decline got underway.

Deliberate attempts to foster small-family norms are another possible source of attitudinal change. Compared to government program impact on contraceptive marketing or on the legitimation of birth control, government efforts to alter family-size preferences are especially hard to assess, but this does not mean that such efforts are necessarily ineffective. Their focus, after all, is directly on fertility outcomes rather than on means. In Indonesia the Family Planning Board, after some procrastination, has very recently embarked on a publicity campaign to promote the two-child family. The campaign's results may be intangible but the shift in emphasis it represents is significant.

Attitudes Toward Fertility Regulation

In the first major KAP survey undertaken in Indonesia, in Jakarta in 1968, three-quarters of both men and women (married and at reproductive ages) claimed not to know any method of fertility regulation (Suyono, 1974). Up to 1967 there was nearly complete public silence on the subject. Senior government officials expressed neutral, occasionally pronatalist, and almost always demographically uninformed views of population growth. The change that took place over 1968-70 was profound: family planning emerged as one of the central issues on the agenda of the New Order government. President Suharto made repeated references in his speeches to the urgency of reducing fertility. The newly established National Family Planning Coordinating Board embarked on an intensive program of information, education, and communication activities, drawing on publicity methods proven elsewhere and on its own innovations. On billboards, at local meetings, in schoolrooms, in newspapers, on radio broadcasts, even in _wayang_ (puppet) performances, messages urging adoption of family planning were inescapable. By 1976 three-quarters of married women under 50 in Jakarta said they had heard of at least one method of family planning, by 1979 over 80 percent. The same increase in declared knowledge occurred throughout Java and Bali, and, with some lag, in other regions as well. In 1976, "ever heard" proportions were 76 percent in Java and 51 percent in the rest of Indonesia; in 1979, the corresponding percentages were 83 and 67 (Chernichovsky and Meesook, 1981:Table A4; Central Bureau of Statistics, 1981a:Table 6).

Declared awareness of family planning methods and of the government's promotion of their use does not, of course, necessarily track individual attitudes toward those methods. The survey responses probably did not record traditional spacing customs routinely practiced but considered as something quite apart from the government's program interests. Moreover, the recent high levels of awareness may not be accompanied by similarly high rates of private approval. Even survey data on current use of contraception provide no sure minimum figure for approval--especially in a pill-dominated program such as Indonesia's. (A systematic replication of "focus-group" studies like that of Suyono et al. [1981], exploring views of particular methods of contraception, would be a valuable source of information here.) At the least, the publicity surrounding the family planning program has markedly raised the salience of decisions about contraception in most people's minds and has put modern contraceptive methods, particularly the pill, among the alternatives that can be routinely considered.

Finally, among relevant attitudes toward fertility regulation we should take note also of changing views about breastfeeding and postpartum abstinence. Among the poor, practice here may mainly reflect economic exigencies--more women have occupations that are incompatible with breastfeeding, so durations are shortened and contraception may be used as a substitute in birth-spacing (Rens, 1980). For the better-off, Hull and Hull (1977:53) describe the attitudinal shifts bringing about changes in behavior:

> Ideas about 'proper' modern behaviour, the advertisements of powdered milk producers, and the advice of doctors trained in 'Western' traditions, have combined to influence young women to wean their children earlier. At the same time, changing ideas about the husband-wife relationship have led to the growing trend among women in upper and middle income groups to resume sexual relations earlier in the post-partum period.

ROLE OF THE FAMILY PLANNING PROGRAM

The above discussion of the Indonesian fertility decline over the last 15 years or so has repeatedly mentioned aspects of the organized family planning program: program effects on the economics of birth control (subsidization of contraceptive services), the program's links with local government and its use of community groups, and the explicit communication campaigns that have helped to legitimate contraception and to emphasize the national interest in lower fertility. It may be helpful, however, to say something about the program as a whole and its role in the fertility change.

We would note first that we have limited faith in statistical efforts to separate program impact from other (socioeconomic and cultural) factors as causes of fertility change. The conventional variables used to capture these factors differ in conceptual level and overlap in content. The problem is particularly acute in measuring program effort itself: decisions governing the availability of program services and even the level of overt political commitment to fertility reduction goals typically depend in part on the existing demand for birth control in the population. Moreover, a program's possibly large influence on service demand--perhaps its most important effect--is almost impossible to distinguish convincingly from the host of other plausible demand-influencing factors. Quantitative assessment of family planning program effect requires a proper experimental design--as, for example, was attempted recently in a series of studies in Comilla district in Bangladesh (see Phillips et al., 1982)--but has not been undertaken in Indonesia. (The regional variation in Indonesia's program activity, however, does provide a crude quasi-experimental framework--see below.)

In Indonesia, this analytical problem is further complicated by the looseness with which program content is delimited. Is the mobilization of general administrative resources behind the low fertility goal properly seen as an element of "program effort"? A case can certainly be made for an expansive definition, but we then rapidly move far beyond common usage. The case of China provides an extreme illustration when the radical fertility decline of the 1970s is ascribed to "an effective family planning program" (see, for example, World Bank, 1981:109): effective, in its own terms, it certainly was; a mere family planning program in a sense recognizable elsewhere it was not.

The specific accomplishments of the government's direct involvement in family planning activities in Indonesia having significance for the fertility decline are (1) development of an effective contraceptive distribution system; (2) mounting of extensive information, education, and communications activities publicizing fertility and family-size issues and promoting the image of the small family; and (3) mobilization of local government and local community groups to bring informal pressures on eligible couples to practice contraception. Each of these has been discussed at various points earlier in this chapter. The first and second are the stock-in-trade of family planning programs everywhere, although they are areas in which Indonesia has performed particularly well; the third is the distinctive characteristic of the Indonesian program and its main source of interest to outsiders. (An additional point of interest is the management of the Family Planning Board--specifically, its avoidance of many of the bureaucratic inefficiencies of mainline government departments, and its impressive information system and research and training activities.)

The Indonesian government's commitment to birth control, though late in coming, was whole-hearted. Besides the Ministry of Health, the line ministry most directly concerned with service delivery, the Interior Ministry also became closely involved with program performance, and Interior Ministry officials--provincial governors, _bupatis_, and _camats_--were given responsibility for meeting target numbers of acceptors. Other Ministries (Information, Education, Social Affairs, etc.) and private agencies (such as the Indonesian Planned Parenthood Association) undertook relevant specialized activities. The National Family Planning Coordinating Board, established in 1970 as an agency reporting directly to the President (and as such, with the same formal status as the National Development Planning Board) had the task of stimulating and coordinating these activities and aligning them into a coherent program.

In some regions the military bureaucracy also became involved in promoting birth control. The case of East Java, where the alliance of civil and military administrations behind family planning goals was most advanced, is discussed by Purbangkoro (1978): units of East Java's Brawijaya Division competed in annual "special drives" to achieve target numbers of acceptors of contraceptive supplies or services. The possibilities for coercion in such an involvement are of course obvious, but there is no evidence of physical as opposed to social or administrative pressure being used. As Purbangkoro (1978:68) puts it, the results were intended to be achieved "by confronting those reluctant individuals, whose initial resistance is so great as to block experimentation with family planning or with the IUD, with such overwhelming arguments, both verbal and symbolic (in the sense of demonstrating that family planning and acceptance of the IUD are approved, used and supported by those community leaders whose status and opinions have traditionally been influential in the life of the average villager), that the individual is compelled to accept because of the force of the arguments used." There are echoes here of the methods used to attain high contraceptive prevalence rates in China in the 1970s; nowhere in Indonesia's birth control program, however, have there been parallels to the excesses of India's Emergency or post-1980 China's "one-child family" campaign (cf. Gwatkin, 1979; Goodstadt, 1982).

Groups of female acceptors at the kelurahan or hamlet level have also played a role in maintaining contraceptive use rates in their communities. The interests of such groups often extend beyond family planning to health, nutrition, and other areas (rotating credit schemes are especially popular). Recurrent proposals in Indonesia for the family planning program to be "integrated" with health and other government program activities typically rely on this span of interests as the basis for integration.

The program's growth is recounted by T. Hull et al. (1977), and the details of program performance are recorded in numerous publications of the Family Planning Board (see the Board's technical report series--for example, Soetedjo and Parsons, 1977--and its monthly service statistics reports). The Board's administrative flexibility and willingness to innovative, evidenced by its encouragement of decentralization and its tailoring of program approaches to specific regional conditions, are discussed by Snodgrass (1979). The overall impact of the program on fertility is one of the issues taken up in the final section of this chapter.

DISCUSSION

This chapter has set out what have plausibly been the contributing factors to Indonesia's fertility decline over the past 15 or so years. Such a listing, of course, is not a satisfactory stopping point. It provides a surfeit of explanation, yet many questions remain open. For example, while the factors examined here may together have been sufficient to bring about the decline, can we say anything about their necessity? Under what modifications of the circumstances that actually prevailed would fertility have fallen faster--or earlier? To what degree has Indonesia's demographic experience been sui generis, and to what degree a response to regional or even global changes that in one way or another were bound to make themselves felt? Although such questions do not have straightforward or conclusive answers, they require discussion if we are to narrow the range of interpretations consistent with the findings presented here.

At the outset of this chapter, it was noted that different groups in the population (defined, for example, by cultural background or economic status) may experience different kinds of fertility transition. The weightings of the various fertility determinants posited above are unlikely to be uniform across all such groups; even if they were, variations in pretransition fertility levels by region and class (cf. Tables 11 and 17), and the defining characteristics of the groups themselves, would produce different demographic effects. Efforts to specify explanation by population group, however, very quickly come up against inadequacies in the empirical record.

Consider how to account for the regional pattern of fertility change summarized in Figures 3 and 4. The striking feature of this pattern is the extent to which major regions outside Java have participated in the decline. Comparing Java and Sumatra, for example, not only is the proportional decline in the total fertility of these two islands similar over the interval 1967-70 to 1974-78, but it is also similar over the two subintervals 1967-70 to 1971-75 and 1971-75 to 1974-78. Yet the family planning program was not extended to Sumatra until 1974, and two years later the Sumatran contraceptive use rate reported in the Intercensal Population Survey was only 5 percent--by which time in Java it had already reached 24 percent (Table 21). Two proximate factors plausibly make for this similarity of outcome: first, a larger effect of changing marriage patterns at early ages in Sumatra than in Java (fertility at ages 15-19 in Sumatra fell by one-third over the whole period, as contrasted with one-sixth in Java); and second, a smaller initial effect of contraceptive use on fertility in Java than in Sumatra as a result of a greater degree of substitution (of modern contraception for traditional methods of birth-spacing) in Java.

Is the currently higher fertility in regions outside Java a simple lag phenomenon, reflecting the several-years' lead that Java has in ready availability of modern contraception? There may be some lag effect involved, but we see the more significant basis for the gap in different courses of change in the demand for children. (Regional differences in involuntary childlessness also contribute.) Unfortunately, the variegation within each region limits the sharpness of the contrasts that can be drawn at this high level of aggregation. As factors giving rise to a demand gap between Sumatra and Java, for example, we might point to Sumatra's more heavily agrarian economy (as of 1980, agriculture was given as the main occupation of 65 percent of the labor force in Sumatra, 50 percent in Java), its less developed transport and communications systems, its generally stronger kin-group influence on nuclear family behavior, and its weaker traditions of deference to civil authority. However, to spell out such differences in the detail needed to tie them to fertility behavior requires further disaggregation--to the province level or below, and by cultural background--not possible with the data thus far available.

Just as changes in fertility in different regions may show distinct patterns of determinants, so, too, different socioeconomic status groups in the population may experience distinct pressures for change. The likelihood of this is clear from the earlier discussion in the present chapter. The economics of fertility obviously differ over the income range; it would be disingenuous to believe that administrative pressures for use of modern contraception do not similarly vary.

In a study that seeks to explain differential contraceptive use rates found in the 1976 Indonesia Fertility Survey of Java and Bali, Freedman et al. (1981) suggest that two different processes are at work, one accounting for high use rates among people of high economic status (as measured by housing quality, ownership of consumer durables, or per capita consumption), the other accounting for the comparatively high use rates at the other end of the status distribution--a feature that "conventional wisdom" would not have predicted. The first process is seen as a straightforward "modernization effect" of education and higher occupational status in leading to rising levels of contraceptive use (p. 11). The second is more closely tied to the family planning program in its various dimensions (p. 15):

> [S]heer Malthusian pressure coupled with aspirations arising out of access to outside influences including the information and services of the family planning program may increase contraceptive use among the poor. . . . [I]t is possible that many poor people also adopt contraception because they find it difficult to resist the strong pressures of local officials to help them meet the mandated goals for local areas.

While clearly a simplification, this dual picture does capture some of the distinctiveness of the decline of marital fertility in Java.

Region (or better, culture) and socioeconomic status may be the most important divisions across which specific determinants of fertility change may vary, but there are of course others. Gender is an example: in many societies, arguably less so in Indonesia, changes affecting the economic position of women are thought to have been particularly significant in influencing fertility. In most societies, effects on fertility are probably also specific by age cohort: new cohorts with different experiences and hence different values move into the reproductive ages, and fertility patterns shift. In

Indonesia, women who were in the prime reproductive years (20-34) in the 1970s were born in the 1940s and 1950s; they and their husbands were better educated than previous cohorts--half or more of each sex had completed primary school, and a quarter of the males had finished junior high school, in both cases a steep increase from the 1930s cohorts; many more than before lived in cities; all were exposed in their youth to the ideology of the newly independent nation and its hopes for rapid economic development. Yet a simple cohort-turnover explanation of fertility decline cannot get us far in this case. Women aged 20-34 years in the 1970s contributed only half the fertility decline; older women showed a proportionately larger drop (see Table 12). Morever, the slight evidence we as yet have on the subject (children ever born by education and age of mother, for 1971 and 1976) locates most of the fertility decline among women with no education or incomplete primary school--precisely those who benefited least from the postcolonial expansion of schooling.

While as yet seriously impeded by data limitations, attempts at narrower specification of fertility determinants are one of the few ways we have of investigating necessary rather than sufficient conditions of fertility decline in a setting like Indonesia. On certain issues, however, counterfactual reasoning may add something--notably in trying to sort out which of the broad underlying shifts in Indonesia's circumstances since 1967 were most closely associated with demographic change. Recall these shifts:

- The radical change in political conditions that occurred over 1965-67 profoundly altered the national policy environment and the realities of local administration. Economic development was accorded central, almost ideological, status, and the pragmatic policy measures that were adopted to advance it (fertility control among them) brooked no political opposition.

- Following hard upon the successful economic stabilization measures introduced in 1967 was the strong export recovery, the renewed flow of foreign aid, and, in a few more years, the oil-price surge. Revenues poured into the government's hands, and Indonesia embarked on its first period of rapid economic growth since the early 1950s--indeed, in some sectors of the economy it was possibly the first period of positive net capital formation since before the Great Depression. While direct benefits were unevenly spread, by the end of the 1970s some improvement in real incomes was apparent among a large section of the population; for many the gains were dramatic.

- The political reorientation and economic gains together opened Indonesian society to a profusion of imported consumer goods and to more intense exposure to "western" cultural influences on consumption patterns and styles of living.

- Strong, top-level government commitment to a policy goal of lower fertility was translated into a vigorous family planning program which rapidly blanketed Java and Bali, and later the rest of the country, with a distribution network for modern contraceptives and with campaigns to promote their use.

In addition to these post-1967 changes, there was also the continuation of several earlier trends: steady growth of literacy and average educational attainment in the population, continued decline in child mortality, and fewer women marrying at very young ages. Moreover, the simple turnover of population was bringing the large 1950s birth cohorts into labor force and reproductive ages.

While many interesting counterfactual propositions concerning fertility determinants could be constructed from this array of factors, two broad questions particularly deserve attention: (1) What might have been the recent course of Indonesian fertility had there not been explicit and heavy government involvement in contraceptive promotion and delivery? (2) Could a substantial fertility decline have been set off earlier--say in the early 1960s or even in the 1950s--if a serious and competent family planning program had been mounted then? (India's program was begun, albeit slowly, in 1952.)

The first question leaves unspecified the critical issue of what the government's policy toward high fertility might have been in the absence of a family planning program. We take it for granted that Sukarno's pronatalism would have been reversed under virtually any circumstances. The obvious objectives of policy action would then have been to delay marriage and, directly, encourage small families. Achievement of the former, straightforward as it sounds, has eluded contemporary policy makers almost everywhere, although community control over marriage and household formation was a routine practice in much of preindustrial Europe and Japan. In Indonesia the limited reforms enacted in the 1974 Marriage Law were made despite Muslim opposition that had defeated an earlier legislative effort. However, the option of mobilizing administrative resources behind late marriage presumably existed and could perhaps have been very effective. Certainly this policy route was not self-evidently more sensitive in the Indonesian setting than one based on promotion of contraception. Action directed at limiting family size without a primary stress on methods could also be envisaged: not only promotional campaigns like those lately adopted, but also decentralized targeting making use of the local civil administration much in the way it in fact was used to back the family planning program, except that fertility outcome rather than contraceptive acceptance would be the measure of achievement. However, while this would be potentially effective in fertility impact, the social cost of a family size policy could be high. The element of commandism built into the present family planning program is quite innocuous (pills are the dominant method, abortion is prohibited, and sterilization is not offered) in comparison to the possibilities for coercive pressures that arise under such an objective--and that have arisen under it in some other countries.

Would fertility have declined anyway in response to the changes in economy and administration that have taken place since 1967, with increased demand for modern contraception satisfied by the private sector and by the network of public health clinics? Many of the downward pressures on fertility identified earlier in this chapter are quite independent of the program, so there is little doubt that demand would indeed have risen and induced the growth of some kind of delivery network for services and supplies. The additional contributions that the government program has supplied (chiefly information, mass promotion, subsidy, and a target system) have with equally little doubt speeded the process, especially as it has affected the rural poor. A careful analysis of regional program incidence and fertility change at the province level will shed some more light on this question; its resolution in precise quantitative terms, however, is unlikely to be possible.

The second counterfactual concerned the putative impact of a family planning program established in the 1950s or early 1960s. Here our assumption must be that political conditions somehow permitted its operation, although the effective administrative backing of later years would have been missing. The apparent extraordinary level of ignorance of modern contraceptive methods that prevailed in Indonesia until the 1970s (as documented in the "ever heard" survey data discussed earlier) could surely have been corrected a decade before. Whether a significant service demand would then have revealed itself is dubious, however. It was argued earlier that in most of Indonesian society, family patterns were not in themselves antithetical to low fertility--as contrasted, for example, with the situation that many observers see in Bangladesh, Pakistan, or some of the northern states of India. Yet high mortality, intense politicization of local issues, and the increasing shambles of an economy sliding into hyperinflation could hardly have provided a less favorable environment for fertility reduction. The circumstances would even have militated against a "poverty-induced" transition of the sort sometimes argued for Kerala or Tamil Nadu. On balance, then, it may be concluded that the onset of fertility decline in Indonesia was delayed less by the lateness of undertaking a family planning program than by the political turmoil and economic regression of that time. Either a coherent local administration or a steady economic course could have paved the way for demographic change; both in fact came with the New Order government.

CHAPTER 5

CONCLUSION AND PROSPECT

There would be little value in attempting to summarize the picture of Indonesia's fertility decline presented in Chapter 4. The patterns of change in the economics of children and fertility regulation, in social and administrative pressures on fertility decisions, and in the values people bring to this domain are intricate and, in their combination, unique to Indonesia. Glossing over this detail or packaging it into familiar broad categories may be necessary for comparative analysis, but detracts from understanding the particular case. The intent of this brief concluding chapter is to draw out the main implications of the preceding account for future Indonesian fertility trends and for certain aspects of population policy.

The most recent United Nations projection of Indonesian population growth over the next few decades is summarized in Table 23. This is the medium variant; the high and low variants span a range of 7 million people in 1990, 16 million in 2000, 27 million in 2010, and 38 million in 2020. We saw that the sharp decline in the growth rate in the 1970s, built into these projections, did not in fact materialize because of a faster-than-expected drop in the death rate. (Very likely such a decline in the rate of growth did begin late in the decade. Note, however, that current World Bank projections see an average growth rate of 2 percent over the rest of this century and a population at 2000 of 216 million [World Bank, 1982a:Table 17].) In any event, Indonesia's population most probably will have passed 200 million by the year 2000 and still be growing then by more than 2 million per year; with even less qualification, Java's will have passed 100 million before the end of the 1980s.

TABLE 23 United Nations 1980 Medium Variant Projection of Population and Vital Rates, 1980-2020: Indonesia

Item[a]	1980	1990	2000	2010	2020
Population (millions)	148	174	199	220	238
Growth rate (percent)	1.7	1.5	1.2	0.9	0.7
Birth rate (per 1,000)	34	28	23	19	17
Death rate (per 1,000)	16	13	11	10	9
Total fertility rate	4.6	3.4	2.6	2.2	2.0
Life expectancy (years)	48	53	57	62	66

[a] Rates refer to annual averages over the five-year period ending in the designated year.

Source: United Nations (1981).

The bland presumption of continued smooth and comparatively steep declines in birth and death rates in these projections is based on little more than faith and hope (safeguarded by the usual annotation that, despite this being virtually the sole use to which they are put, no prediction is intended). Drawing on the present study, can we find more solidly based assumptions about the future course of demographic change and, specifically, fertility trends?

Broadly determining that course will be economic conditions. Most observers expect Indonesia's impressive recent pace of economic growth to continue only a little slackened in the 1980s--provided the world recession ends and oil prices recover (see, for example, World Bank, 1982a). A real GDP growth rate of 7 percent per year, which doubles the total in a decade, is plausible under those optimistic provisos (the World Bank's "high case" projection is 7.5 percent). This would yield a per capita GDP for 1990 (in 1980 dollars) of around $700--about the level of the Philippines or Thailand today. In the 1990s, Indonesia is expected to become a net oil importer--known reserves are modest by Middle Eastern or Mexican standards and (subsidized) domestic consumption is surging--but most other primary product exports do not seem similarly constrained. The country's future in exports of manufactures is uncertain. Various other Asian nations, China among them, are likely to be strong competitors in moving into the labor-intensive manufacturing export industries (textiles, simple electronics, and so on) as these are vacated by Taiwan, South Korea, Hong Kong, and Singapore. Moreover, mounting tariff barriers and advances in automation in the industrialized world may make this route of development much more difficult to follow than it was when those countries took it. Indonesia's potentially vast domestic market, on the other hand, can well support a large manufacturing sector, given protection, while the likely worldwide expansion of component subcontracting industries may provide appreciable export opportunities.

Whether this prospective economic growth, assuming it takes place, will benefit all classes in the population will depend critically on its employment dimension. In their study of recent Indonesian labor absorption, Mazumdar and Lluch (1980) concluded that economic trends in the 1970s were not moving Indonesia closer to the stage at which surplus labor is eliminated and real wages start increasing steeply--the "turning point" in Fei-Ranis growth theory, beyond which an economy emerges into the rich neoclassical era. The evidence on this critical issue is scant, however. Labor shortages that have sometimes been reported in rural Java in recent years are adequately explained by the seasonality and short-term nature of the work involved--hence competing poorly with more regular even if lower-paid activities--and poor information flows in the economy (Jones and Ward, 1981). On the positive side, improvements in government-supplied education and health services, an emphasis in the third Five-Year Plan (1979-84), have a direct if typically unrecorded distributional impact. Other government programs, particularly the series of labor-intensive public works schemes (INPRES programs), small-scale credit, and rural electrification, also contribute significantly to distributional as well as growth objectives. And while it continues (there are strong economic reasons against it), so does the heavy subsidy of the domestic price of kerosene, the basic fuel for the great majority of Indonesian households. Nevertheless, with the population at labor force ages expanding by 2.3 percent per year in the 1980s and the annual pool of labor force entrants increasing from 3.3 million in 1980 to 3.8 million in 1990 (and probably at least that number in 2000), the problems of employment creation confronting Indonesia's economic policy makers are extremely serious.

Assumptions about future economic growth and distribution are not enough to permit speculation on the course of fertility change. In Chapter 4, substantial emphasis was also placed on patterns of social organization, on the role of local government administration, on certain aspects of cultural change, and so on--factors that were often tied only loosely to economic conditions, but that themselves strongly influenced the significance of those conditions for fertility. Most government policy that has an intended demographic impact is concerned with such factors.

On economic grounds alone, despite the various uncertainties, Indonesia's fertility decline would be expected to continue in the future. Competition to enter the high-wage, formal sector of the economy, especially through secondary and higher education, will maintain pressures for small families among the upwardly mobile; at least marginal improvement in economic levels but a more monetized, consumption-oriented environment will keep the economics of fertility salient for the poor. Among the growing urban and rural-but-nonagricultural population, rich and poor, these economics will probably (for the reasons discussed earlier) favor comparatively low completed fertility. Continued gains in child mortality will steadily raise the expected family size (and lower its variance) that results from a given number of births.

The economics of fertility depend also on the nature and scale of economic transfers within the family. In a society increasingly lacking other informal support networks, the family would retain an important role in income averaging and asset management over an individual's life cycle. At the same time, reliance on later returns from children may well become an unsafe assumption for parents. Current trends in actual and expected transfers in the case of Indonesia are largely unknown, however. Without more information on such trends, speculation about their fertility implications is unprofitable.

Continued local government influence is perhaps easier to predict. In the short run, little change can be foreseen in the firm administrative structure in Indonesia's rural areas. As noted earlier, this apparatus has contributed to the performance of the national family planning program and to certain other major development efforts. It has also quietened the political conflict that earlier may well have dominated views of the future and kept individual time horizons short. Arguably, however, it is less conducive to local economic enterprise (other than activities closely tied to itself). Local organizational initiatives--particularly among marginal farmers and landless workers--are unlikely to emerge, or to survive if they did, in such an environment; yet, formal or informal cooperativization to promote the economic interests of that large segment of the population could make a major contribution to rural welfare in Indonesia. The report of the second Asian Agricultural Survey, for example, set store by "semi-spontaneous, small, primary organizations operating on the basis of direct participation and serving well defined common interests . . . [and able to] generate measurable private gains for their participants" (Asian Development Bank, 1978:228-229). The Indian Planning Commission's encouragement of this avenue of change in rural India is discussed by Krishna (1979). (The comparison of Indonesia with China is also instructive here: McCawley [1981:86] remarks that in China, production teams and brigades have a good deal of independence in production and investment decisions but within a government-controlled external environment, whereas in Indonesia, "the relationship between the scope for local decision making in rural areas and the wider economic and administrative environment is almost the reverse." Paradoxically, "although the _indirect_ government control over the Chinese rural economy is quite pervasive, the hand of government seems to be more _directly_ felt in rural Indonesia".) If the rural sector were merely engaged in, so to speak, a holding action until industrial labor absorption started to drive up wages, this would be a less serious issue. As noted above, however, that does not appear to be the prospect in Indonesia.

It it not inconceivable that the present espousal of consumer values in Indonesia, with its supports in advertising and the media, could at some point be sharply curtailed. Examples of such course changes exist elsewhere. Maintenance of the current situation, however, seems more likely--and with it, continuation of a downward influence on fertility.

The government family planning program can presumably continue to benefit from these various demand-creating forces while making its own contribution to service demand. The program's declared long-term strategy foresees the institutionalization of its low-fertility objectives through two processes: first, by "integration of the national population policy in the social, economic, cultural and developmental activities of all government programs"; and second (less evidently within the scope of deliberate government action), by "internalization within individuals and communities of acceptance of fertility control and small families so that both ultimately become cultural norms and become socially sanctioned forms of behavior" (National Family Planning Coordinating Board, 1978:12).

This is not to suggest that the future course of fertility is somehow inherent in what has occurred thus far. To some observers, fertility decline, once well underway, appears to have its own momentum, feeding on itself and halting only with attainment of an average two- or three-child family. The less mysterious process outlined here, in which fertility patterns are tied to a particular social setting and fertility trends to shifting institutional arrangements and their economic and cultural counterparts, has no such certain outcome.

It is a curious reflection on the capriciousness (or short attention span) of the international population community that, although Indonesia's demographic transition has roughly paralleled India's over the last two decades (with East Java's present fertility on a par with Kerala's or Tamil Nadu's), Indonesia is hailed as a population policy success story while India is typically portrayed as a failure. The demographic similarity may well extend to the bases for some of the regional fertility differentials: the likelihood that most other Indonesian provinces will soon reach East Java's present fertility level may be no greater than that of the northern states of India soon reaching Kerala's. On the other hand, Indonesia's comparative economic vigor over the last 15 years and its distinctive administrative complexion may foretell an increasing divergence from "South Asian" growth patterns and a closer approach to East Asian models, with demographic patterns following suit. This study cannot hope to address such broad issues, but if successful, it will have suggested how fertility in particular is linked to that future course of development.

APPENDIX: DATA SOURCES

The following notes describe the more important of the primary statistical sources for the study of Indonesian fertility in the postwar period.

Population Censuses, 1961, 1971, 1980

The 1961 census, taken in October of that year, covered all Indonesia except Irian Jaya. Only a fraction of the planned tabulations were ever published and the worksheets for the remainder no longer exist. The only Indonesia-wide data it yielded came from an initial hand-count and a one-percent sample of the returns (see, for example, Central Bureau of Statistics, 1963). Neither of these included retrospective information on children ever born. Such data are available only for the three provinces for which full tabulations (based on 100 percent urban and 10 percent rural returns) were completed: Jakarta, Yogyakarta, and East Java.

The 1971 census comprised a complete enumeration in September and a more detailed sample enumeration in October. The latter included both household and individual questionnaires and had an overall sampling fraction of 3.8 percent. Total and age-specific fertility estimates based on "own-children" tabulations of this sample are given in Central Bureau of Statistics (1976); an analysis of these data is presented in Cho et al. (1980).

The 1980 census also was a complete count (September-October) followed by a sample enumeration with a much longer questionnaire (October), this time with a 5-percent sampling fraction. A 10-percent subsample of the latter was tabulated to provide the first results of the census on fertility, including data on children ever born, "own-children" estimates of total fertility, and reported patterns of contraceptive use (Central Bureau of Statistics, 1982a, 1982b).

National Socioeconomic Survey (SUSENAS)

Begun in 1963-64, this series of large-scale surveys conducted by the Central Bureau of Statistics has been held every one or two years. Sampling fractions have all been about .001. The topical focus has varied from survey to survey and not all rounds had national coverage. Fertility estimates from most of these surveys are difficult to derive and are of poor quality. The 1979 survey, however, was a considerable improvement in this regard; detailed information from it (in most cases, combined with analogous 1978 results to give a greater sample size) are published in Central Bureau of Statistics (1981a). Results include "own-children" fertility estimates and elaborate regional tabulations of patterns of contraceptive use. The 1979 survey covered all provinces except Maluku (only Ambon and Maluku Tengah *kabupaten*), Irian Jaya (only 3 out of 9 kabupatens), and East Timor. (The effect of these omissions for Indonesia averages is usually negligible.)

1968 Jakarta KAP Survey

The first major study of family planning knowledge, attitudes, and practice (KAP) in Indonesia, this survey was conducted by a group associated with the Jakarta Family Planning Project in 1968; the analysis was done at the Community and Family Study Center, University of Chicago. For its findings, see Suyono (1974).

1973 Fertility-Mortality Survey

This survey, covering Java (excluding Jakarta), Sumatra, Sulawesi, and Bali (86 percent of the population) was conducted by the Demographic Institute of the University of Indonesia. The sample comprised 54,000 households. It produced fertility estimates based on maternity histories as well as data on marriage and contraception. Reports and analyses include Demographic Institute (1974-75), McDonald et al. (1976), and Soeradji (1979).

Value of Children Survey

The Indonesian Value of Children Survey was part of the second phase of the cross-national Value of Children Project coordinated by the East-West Population Institute, Honolulu. The survey, held in 1975, was undertaken jointly by the Population Institute, Gadjah Mada University, Yogyakarta and the Institute for Social Research, Padjadjaran State University, Bandung. The sample consisted of 2,000 wives and 1,000 husbands, split between Javanese and Sundanese regions of Java. Results are reported in Darroch et al. (1981).

1976 Intercensal Population Survey (SUPAS)

This elaborate three-round survey was conducted by the Central Bureau of Statistics.

SUPAS I (February-March) covered 257,000 households in all provinces (except East Timor), although rural areas of Maluku and Irian Jaya were not sampled and in East Nusatenggara only one kabupaten (Kupang) out of the 12 was included. Very limited information was sought, but enough to permit computation of fertility estimates based on the "own-children" method. The questionnaire is reproduced in Central Bureau of Statistics (1977); findings are reported in Suharto and Cho (1978).

SUPAS II (February-March) used a subsample of 60,000 households from SUPAS I with the same geographic coverage. A considerably larger questionnaire was used, seeking among other things information on marriage, fertility, and birth control. The questionnaire is reproduced in Central Bureau of Statistics (1977). Results are published in Central Bureau of Statistics (1978a, 1978b).

SUPAS III, the Indonesia Fertility Survey (April-May) also used a subsample of SUPAS I households, 10,500 in all, but in Java and Bali only. The questionnaire was essentially the core module of the World Fertility Survey, administrered to all ever-married women aged under 50 in these households. A full description and presentation of the main results are contained in the WFS Principal Report for Indonesia (Indonesia Fertility Survey, 1978); reliability is discussed in MacDonald et al. (1978).

Indonesia Fertility Survey

See 1976 Intercensal Population Survey

1980-82 East Java Population Survey

Undertaken by the Central Bureau of Statistics in collaboration with the International Program of Laboratories for Population Statistics (POPLAB), this is a three-round survey of about 20,000 households in East Java (1980 population 29 million). First interviews took place in May-June 1980 and were repeated 12 and 24 months later. The aim of the survey is to measure fertility and mortality rates in the province. Initial results were reported in Sullivan (1982).

Vital Registration Statistics

Birth and death registration in Indonesia, although legally required, is seriously incomplete and is not regarded as a useful source of information on fertility and mortality. A Sample Vital Registration Project covering 10 representative regions (usually *kecamatans*) during 1974-77 found only about half of births were being registered, with the proportion as low as 20 percent in some areas--and only 30-40 percent in Jakarta (see Central Bureau of Statistics, 1979b).

Micro-Level Studies

Indonesia has a quite rich collection of anthropological research, but there are comparatively few intensive local studies that are significant sources of demographic information. Those that are particularly relevant to a study of fertility--nearly all of them recent--are the following (names in some cases are pseudonyms; province location in parentheses):

Sriharjo (Yogyakarta)--Singarimbun and Manning (1974)
Kali Loro (Yogyakarta)--White (1976).
Maguwoharjo (Yogyakarta)--T. Hull (1975), V. Hull (1975).
Ngaglik (Yogyakarta)--V. Hull (1978), Rens (1980).
Serpong (West Java)--Zuidberg (1978).
Cermee, Duduk Sampeyan (East Java)--Gille and Pardoko (1966).

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*Being published as manual X in the series of manuals of demographic analysis of the Population Division, Department of International Economic and Socal Affairs, United Nations (1982).

**Limited edition; being published by Academic Press, Inc. as part of *Determinants of Fertility in Developing Countries: A Summary of Knowledge*. © 1983 Academic Press, Inc.

***Published by World Fertility Survey, *Scientific Reports*, No. 40 November 1982.